**Lesson Idea using the ES templates to develop capacity for using the SEP appropriately and effectively:**

Preparation needed: TLs bring a lesson idea they have used or will be using, identify the practice(s) associated with it, and identify the learning outcomes, including what evidence will they collect (not necessarily formally) to know how successful their students are with the outcomes.

Lesson Idea:

TLs would work in pairs. One TL would share his/her lesson idea and learning outcomes. Then, together, they’d look at the EV template for the SEP associated with the lesson to determine any of the following ideas:

* will the lesson build toward these evidences identified in the ES template?
* is the lesson at the appropriate level of rigor for the grade band? (keep in mind that the ES are written to the END of grade band)
* could they modify the lesson based on what they see in the ES template to be more effective?
* do they identify other implications for lessons connected to this lesson that they should document?
* is their lesson limited to only this SEP, or are they really having the students use other SEPs? If another SEP is identified, look at the ES template for that practice and evaluate using the same questions.
* Other questions?
* Have TLs document their findings so they can improve the lesson, as well as other lessons.

The second TL would share his/her lesson idea and learning outcomes and repeat the above process.

Debriefing questions:

How has your understating of the SEP(s) changed in this experience? What questions did it raise for you? In what ways was using the ES templates in this way effective or ineffective? What other ways could the ES templates be useful for instructional design? Are their dangers or concerns in using the ES templates? Can these templates be used to help create or organize lessons? In what ways could you use these templates for building capacity in your district? Other questions?

**Example for fishbowl**

*Facilitators would model the process with the following:*

Lesson idea: have students in small groups investigate the biodiversity in a square meter area of the school yard, and put their information in a form so that they can compare what they found with other classmate teams.

Associated practice: carrying out an investigation.

Learning Outcomes:

1. Set-up the investigation: mark off a square meter, devise a way to collect the data (What roles are needed? Who has what role? How will data be recorded?)
2. Collect the data accurately (as grade-level appropriate)
3. Organize the data in a way to facilitate interpretation & analysis
4. Interpret the data and summarize the findings to effectively describe the biodiversity for this square meter

A commentator will facilitate the fishbowl, orchestrating intentional pauses to highlight specific points and probe thinking of the TLs.

**FISHBOWL Script to model** **Lesson Idea using the EV templates to develop capacity for using the SEP appropriately and effectively**

Commentator notes that two intermediate teachers meet to share a lesson experience and use the Evidence Statement templates to evaluate alignment with use of NGSS SEP and make improvements to the lesson. Teacher 1 is sharing her lesson first.

Teacher 1: I'm curious about these new Evidence Statement Templates and I have an idea about a way to use them...a way to improve instruction so that it’s more like the intention of the *Framework* and the NGSS. You know that the Evidence Statements for the PEs are *written through the lens of the Practices.* So what the NGSS writers did to create these Evidence Statements was to create a *template* for each practice at each grade band – these templates define the evidence you'd expect to see a student demonstrate if she was using a particular practice as the writers intended. I'm thinking these templates will help us evaluate my lesson to see if it's hitting the mark -- will I get evidence of student learning that's consistent with the NGSS? *(pause)* Does that make sense to you?

Teacher 2: I think so... Why don't we just try this idea you have and it will probably make more sense to me as we go along? I haven't really looked at these templates yet, but I do know that the Evidence Statements themselves were written through the lens of the practices, so I think I can follow.

Teacher 1: Sure. So here's my lesson idea -- it's part of an ecosystem unit and in this lesson we are gathering information about biodiversity in the schoolyard. In groups of 4, students will measure off a 1 square meter area of the school yard, measure the biodiversity of organisms they see in that square meter, and then the groups will share what they found with the other groups -- you know, they will all have different parts of the school yard... one in the sun, one in the shade, a damp area, dry area -- things like that.

Teacher 2: Sure, I've done something kind of like that before. So what are the learning outcomes you'd like your students to demonstrate?

Teacher 1: Right here... *(points to a paper)* Ok... They'll set up the investigation. They'll need to:

1. Be able measure off a square meter
2. Devise a way to collect the data
3. Collect the data accurately
4. Organize the data in a way that helps them interpret & analyze it

Teacher 2: So when you say "devise a way to collect the data" what are you really looking for?

Teacher 1: Good question. We will actually do this part in class before we go outside. But I do need to flesh that out -- what do I want them to demonstrate that they can do? I need to be specific, I think, or I'll just fall back to how I used to do it -- where I just assigned roles, and gave them a table. They need to do that themselves... you know, I've learned that just having them figure out how to make a table -- what needs to be recorded, how to structure it, things like that -- that's really rich thinking and they're much more engaged in the whole investigation if they have to do that themselves. Anyway, let me add some details to my learning outcomes... *(teacher 1 writes)*

PAUSE: Commentator notes that partner teacher is not just passive, or simply giving comments like "that sounds good" but is questioning the other teacher. Pushing for specifics and clarity. The partner teacher has an important role, and this type of productive discourse is important.

Teacher 1: OK, so do you think you understand my lesson and the learning outcomes I hope to see in my students?

Teacher 2: Yes, I think so...

Teacher 1: Alright, so when I think about this learning experience, I think they are mostly using the practice of "planning and carrying out an investigation." I guess it's really mostly "carrying out," right? Maybe a little "planning" since I am having them figure out how they will collect the data. But anyway, let's look at the practice temple for grade band 3-5 for this practice, and see if my lesson will get me evidence that the students will use this Practice as they are supposed to.

*(Teachers together look at the ES Template)*

Teacher 1: OK, so the first part of the template for this practice is "Identifying the phenomena to be investigated..." (*pauses*) That's not part of *this* lesson... that's earlier, so that doesn't really apply here... The next section of the template is "Identifying the evidence to answer the question about the phenomena..." (*pauses*) Actually, they will have done that already also, but you know... looking at this makes me realize… I'm not sure I did that with them as well as I could have. When I look at this template, I think I would have structured the lesson a little differently... Let me make a note of that. What I'm seeing in this template so far doesn't apply to *this* lesson, but it would have applied *before*... I want to make sure that I remember that, and want to revisit that lesson as well.

Teacher 2: Oh, I see. Using the templates like this is good for thinking about this *investigation practice* -- what's really important for kids to do when doing investigations? what's the important learning for them to be able to demonstrate about investigations? **Your lesson won't do all of that, but you can look for the evidences your lesson can get at -- certain aspects of this practice, and make sure your learning outcomes are really aligned with the practice for those parts.** Interesting... I think I can see that this would be useful...

PAUSE: Commentator notes that even though these teachers are working on this particular lesson, they are developing understanding for the Science and Engineering practice of planning and carrying out investigations, partly because they are thinking about it in a context. They are also beginning to see that, at least for this practice, one lesson might just get at particular aspects of the practice, but that other aspects would need to be addressed in other lessons. In general, their overall understanding for the practice is increasing, but they are also getting insight into how it might affect their unit design. Using the template is helping to develop this understanding. (Other insights as well.)

Teacher 2: Oh, but look at this next section of the template... part 3 -- "collaborative planning"... you definitely had that in your lesson, right?

Teacher 1: Yes. I'm really curious about what it says about that... Look... "*STUDENTS* develop a plan that details how the data will be indicated, collected, and or/measured..." It's very clear that the *students* will be doing this -- I'm not just going to give them a table to fill out -- I'm not going to tell them how to count the organisms... So it's really important that I facilitate that part of the lesson really carefully. I'm going to review dimension 3B of the Framework for Teaching -- the questioning dimension. I’ve found this to be a really good resource, and I’ve found that by focusing on my questioning, I can really make the kids do the thinking – I’m not telling. And what’s cool about that is that it’s getting easier the more I practice. Anyway, let me make a note of that.

Teacher 2: How the data will be *indicated*? What do you think *that* means?

Teacher 1: hmmmm.... I'm not completely sure, but I think that's the part in my lesson where they figure out how to make an effective table, or however they chose to write down there data to make sure they collect what they need. What do you think?

Teacher 2: Yeah, I think that sounds right. I want to make a note of that so we can discuss it at our next PLC. How the data is *indicated* -- that just sounds weird to me...

PAUSE: Commentator notes that the teacher is using the templates to help her plan instruction -- how instruction will ensure that students demonstrate the evidence, and not just be exposed to the learning. The commentator also notes the connection to another resource: the PGES Framework for Teaching. Also notes that Teacher 2 is actively taking notes and learning through the experience, and not just passively giving feedback -- both teachers are engaged and learning.

Teacher 1: OK, so now that we've found the part of the template that is clearly aligned with my learning outcomes, let's look more carefully...

Teacher 2: Right. These first 3 learning outcomes you have are related to parts 3 and 4 in this template -- *collaborative planning* and *collecting the data*...

Teacher 1: And look at the language here -- this will be such a big help for refining my learning outcomes to be more specific. I knew what I wanted in my head because I've been reading so much about the NGSS, but I was pretty vague. So let me update these 3 learning outcomes based on what I see here. *(teacher writes)*

PAUSE: Commentator points out the potential confusion between learning outcomes, learning targets, and exactly how these templates are being used to modify learning outcomes. Ask observers to note potential confusion to be discussed after fishbowl.

Teacher 1: So look at how I modified these 3 outcomes... What do you think?

Teacher 2: yes, that's better. But what about this last learning outcome? "Organize the data in a way that helps them interpret & analyze it..." I don't see anything in the template that gets at that idea.

Teacher 1: You're right. That doesn't make sense to me. Why isn't it there? hmmm...

Teacher 2: hmmmm... Oh, look. Under the template for the next practice: Analyzing and Interpreting data -- the first section is about organizing data. (*pauses*) I guess that does make sense. You have to organize your data before you analyze it. So that part of your lesson really fits with another practice.

Teacher 1: It sure does, and I hadn't really seen it that way. (*pauses*) I'll bet most lessons -- the effective ones, anyway -- actually use more than one practice. In fact, I *might* go so far as to say that a lesson should use more than one practice or it's not very authentic.

Teacher 2: I think I agree with you...

PAUSE: Commentator highlights the realization the teachers had -- even though they thought the learning outcome was for one practice, it didn't "fit" with the template they were looking at. So the teachers are learning that the practices overlap, that they might not be thinking about the practices in the same way that the templates are designed, as well as the power of defining learning outcomes through the lens of the practice.

Teacher 2: You know, this is a pretty cool idea you have... Tell me if I've got this right: *(teacher 2 should recite this carefully)*

Step 1: define the learning outcomes you want for a lesson

Step 2: then use the evidence statement templates for the practices to see *how demonstrating evidence for that learning outcome* is reflected according to the writers of the NGSS. Make sure you consider other practices than the one you originally considered.

Teacher 1 interjects: And by writing the learning outcome through the lens of the practice, you know that the students are doing the work -- it has to be that way!

Teacher 2 continues: Right! I'm with you! …and then Step 3: modify your learning outcomes based on what you've learned.

Teacher 1: Right! and so if you *can't* find a way to incorporate your learning outcome though one of the practice templates, then carefully consider the intent of the outcome... Is it a different practice than you originally considered? Is it strictly content? How could the outcome be modified? Why can't you find it? It would really make you think about your learning outcomes!

Teacher 2: Yes! I really think it would! (*pauses*) You know, there will obviously be a step 4...

Teacher 1: What's that?

Teacher 2: You’d probably have to modify your lesson so that you really will get the evidence of *students* doing the practice, *students demonstrating* their learning. I'm thinking that I'll be doing a lot of that once I get into using these templates...

Teacher 1: Right. Like for this lesson I said that I'd have to plan more carefully for the part where they figure out how to make a useful table... among other parts of the lesson, now that I think about it. (*pauses*) OK, then, a 4 step process:

1. identify learning outcomes for a lesson
2. use the evidence statement templates to see *how demonstrating evidence for that learning outcome* is reflected through a practice. Consider all practices.
3. modify your learning outcomes based on what you've learned
4. modify your lesson to ensure that the students will be using the practices as intended.

Teacher 2: That's it! Let's try it with a lesson I have, OK?

Teacher 1: Sure! But let me update a few more things in my notes. I'd like you to look at it, to make sure I don't miss anything. Then we'll get to yours.

Teacher 2: Yup. I'm excited. I think we're going to learn a lot and come up with better learning outcomes, better lessons. I think this may help me shift my instruction to be more NGSS-like pretty efficiently. I’ll admit that I’ve been struggling.

PAUSE: Commentator reiterates the point of reviewing the lesson outcomes using the ES templates, and emphasizes the following things that using the ES templates in this way may help with:

1. may help the teachers improve their understanding of the practices -- more specifically, the things the students will be doing if they are using the practices like scientists and engineers. For example, they may learn that one practice is rarely done in isolation.
2. ensure that learning outcomes are what the students are doing to demonstrate understanding of the context -- learning outcomes based on content only would have to be modified if they follow this process.
3. help teachers see how they need to modify their lesson in order to get evidence for the modified learning outcome.
4. provide an opportunity to practice productive discourse -- professional learning.
5. Other benefits???