SeeMeTeach®

edTPA and Math

Using SeeMeTeach ® To Generate Responses For Math edTPA Rubrics 6 - 10

Introduction

What is edTPA?
edTPA is a high-stakes assessment used as a summative evaluation for future teachers. Consisting of three major sections, each with five sub-sections, the edTPA candidate prepares materials for an outside assessor to use the fifteen rubrics to evaluate the candidate's submission. Used in over 30 states, in some, the candidate must meet or exceed the passing score to continue into the teaching profession.

What Is SeeMeTeach?
SMT is a teacher observation tool that contains the following:

- Qualitative mode for comments, analysis, and feedback
- Quantitative mode for data collection, analysis, and feedback
- Data displayed using tables, graphs, charts, heat maps
- Data and comments linked to video segments
- Seating chart heat maps showing student engagement and misbehaviors
- Teacher-student interaction data, patterns, and specific wait-times
- Feedback forms, standard or your own
- A collaboration of up to four team members for observation and feedback

Why Use SMT and the Guiding Documents When Preparing an edTPA Submission?

1. Registered SMT users have automatic access to the *SMT and edTPA* supporting documents.
2. SMT is a powerful mechanism for observing video and collecting comments, data, evidence, and indicators that will significantly enrich the written reflection of the teacher candidate's teaching when responding to the edTPA rubric 6-10 prompts that focus on analyzing how the lesson was taught and the impact on student engagement. This added value for rubrics 6-10 is especially true for rubric 10, where the lowest scores surface.
3. Knowing what evidence and indicators are needed when analyzing a lesson can guide teacher candidates when planning and delivering lessons that contain the desired and critical indicators of teaching effectiveness that edTPA assessors look for in a teacher candidate's submission.

The SMT and edTPA documents provide the following:

- Guidance in planning for and teaching a lesson containing robust supporting evidence and indicators of teaching effectiveness.
- Guidance regarding specific supporting use of data and indicators to analyze the lesson and evidence that can be infused when writing the written reflection.

Included for each rubric in the document are the following:

- The guiding question for each rubric.
- The essence of each rubric.
- Concrete examples of evidence and indicators that help meet the expectations of each rubric.

Using SMT During Clinical Experiences and/or the edTPA Semester

Prior to the edTPA Semester - Ideally, the edTPA supporting documents and SMT should be introduced and used when teacher candidates are in the clinical experience phase of their preparation and before the edTPA submission phase, so the teacher-candidate has the opportunity and time to develop solid and positive teaching skills before teaching the edTPA lesson. The desired indicators of effective teaching should be well entrenched, with analysis, reflection, and feedback a normal part of future teachers' expectations. Therefore, candidates become accustomed to using data to analyze their teaching and seeing data embedded in feedback. Learning to make teaching decisions based on data positively affects planning for teaching and classroom instruction and elevates their ability to analyze their teaching – the core of the edTPA challenge. Teaching and analyzing instruction work hand in hand, and knowing how to use SMT as a tool for observation and reflection becomes second nature to the teacher candidate when it comes time to complete, submit, and, therefore, pass and achieve robust scores on the edTPA.

During the edTPA Semester - If a teacher-candidate has not used SMT and the supporting documentation before the edTPA semester, then using these documents will help the teacher-candidate to carefully plan and purposefully embed these score-raising indicators into their lesson plan. Doing so will, in turn, help seed their teaching with actions that reflect the indicators for each rubric 6-10. As a result, the video of their teaching captures critical indicators and evidence that help fulfill the intent of the rubric, which now allows for data and evidence collected by SMT to be embedded in their edTPA narrative. Using SMT and the supporting documents will foster a much more evidence-based and richer description, potentially a more robust score on the edTPA.

Rubric 6: Learning Environment

Rubric 6: Learning Environment - How does the candidate <u>demonstrate a safe and respectful learning environment that supports students' engagement in learning</u>?

The guiding question – "The Guiding Question for Rubric 6 addresses the type of learning environment that the candidate establishes and the degree to which it fosters respectful interactions between the candidate and students, and among students."

The essence of rubric 6 is setting the tone for the class – developing a safe learning environment for everyone. The teacher has a great rapport with their students amidst a respectful climate. The teacher acknowledges student responses positively and encourages feedback when students contribute, thereby setting a welcoming tone and a clear invite for more students to respond. The teacher uses student names and fosters interactions between students that are positive. In this positive learning, environment students respect each other and communicate with each other using student names during the lesson. Criteria for achieving an advanced performance rating include teaching in a manner that challenges students to think at higher levels or apply what they learned somehow.

Tips For Evidence or Indicators for Rubric 6

1. Developing respect, rapport and creating a great learning environment between teachers and students, and among students, is a crucial aspect of Rubric 6. How does this type of relationship and learning environment develop? Not by chance. It takes specific and intentional actions on the teacher's part to create this type of learning environment. These actions are modeled by the teacher and practiced by the students in the context of lessons until it becomes second nature. Develop the following skills and teaching habits with your classes and plan for these things to happen in the lesson you film for edTPA:

- **Use names when interacting** - In general, interact with students to set a positive tone and foster an encouraging learning environment. The teacher uses the students' names when calling on them or referring to their ideas. The teacher encourages students to use each other's names when commenting or asking questions.

- **Teach students how to be active listeners** - For example, model active listening for students that, after listening to a student's idea, start comment or response by saying:
    - "Kylie, that is an interesting idea. Let's think about that for a bit. I wonder how it might work if …?" or,
    - "Kylie, I'm not sure I understand what you are saying. Could you tell us more about your thinking please?" or,

- "Kylie, it sounds interesting, but let me first see if I understood what you are saying. Did you suggest that …?"

This manner of interacting can be taught to students, partially due to modeling this with students and making it an important part of lessons.

- **For change to occur, be consistent, be overt, and practice** - Students will not adopt these behaviors simply after one practice session or automatically know your expectations. Therefore, be overt when giving students directions for the mathematical task – say to your students, "Remember to use names when addressing each other as you talk today. In your small groups, remind each other to use names." You might hold a class discussion where the main goal is to model the desired behaviors and practice attentive listening skills to get them comfortable using the desired student behaviors. As a reminder for students, some teachers list these attentive listening phrases, placed big and bold on the wall where students can easily see them, and ask them to practice incorporating active listening into the lesson, especially when in small groups during a task where more students will get a chance to practice. Then the teacher monitors the lesson, reminds students as needed, and provides feedback on using these skills. Doing this on multiple occasions will help embed this into their manner of interacting with each other.

- **Lowering the risk of answering questions and interacting with others helps create rapport -** The goal is to get all students comfortable contributing in class. The reality is that there is a risk when answering questions and being wrong in front of peers. The teacher can ask questions in many ways, phrased to lower a student's risk of answering questions. In many classes, it is the classroom norm for the teacher to ask questions, and students simply respond to the teacher and rarely do students react to each other. Teachers can change that pattern if they do some of the following.

    - Phrasing questions to lower the risk of responding results in students being more willing to venture a response that might be "correct," which helps the teacher uncover the student's thinking. For example:
        - Asking "<u>What</u> <u>is</u> going to happen if …?" is a question phrased in a manner that seems to have a specific answer, and therefore fewer students are likely to respond.

          Slight changes to the wording of the question and phrased in a manner that lowers the risk of answering questions and usually sparks more student responses. For example, if you ask:
            - "<u>What might</u> happen if …" instead of "<u>What</u> <u>is</u> going to happen if …?"
            - "W<u>hat might be</u> a reason for …?" instead of "<u>What is</u> the reason for …?" or,
            - "If you had to <u>make a guess</u>, <u>what might be an answer to</u> …?" instead of "<u>What is</u> the answer to …?"

- Of course, when asking questions, give students a chance to think and respond to your question; you want to pair questions with ample wait-time one and wait-time two, resulting in students responding more and responding more to each other's ideas.

- Acknowledge student answers with positive and encouraging comments that lower students' risk of answering questions and is more likely to generate multiple responses.
  - After a student responds, accept student ideas and responses - if teachers use encouraging or non-judgmental comments, it lowers the risk of answering questions and looking "wrong" in front of their peers, especially when posing higher-order questions.
    - That is an interesting idea, Sue, tell me more about your thinking.
    - Juan, thank you for contributing to that suggestion. I think I understand what you are saying. Who can add to Juan's ideas? What are some other ideas?

    When you ask students to explain or clarify their answers, you hear their reasons and justification for their answers. When you accept responses and open the question up for more responses, you may get various responses that tell you what other students are thinking. When creative speculative thinking is accepted (versus judged) by the teacher, more students respond, and the teacher is often pleasantly surprised by what they hear.

- The student-to-student interaction - The teacher should use research and evidence-based methods that get students interacting with each other during the lesson
  - Uses student ideas – using a student's idea adds value to their contribution and encourages future contributions.
    - For example (talking to the whole class), "Emily has an interesting idea. Thank you for sharing that with us. So, the idea is that … (to the rest of the class) How are your ideas similar, or different from, that suggestion?" Note the encouraging response to Emily, followed by pushing the question back to the whole class again. Note that when doing this, it helps to teach your students how to disagree in a friendly manner so they can disagree without being negative regarding another student's response.
    - Devon has shared that... Take two minutes and turn and talk to your partner about Devon's idea.

2. Facilitating Higher Order Thinking and Application of Knowledge - Teacher candidates can score higher for Rubric 6 if they offer learning opportunities that challenge students to think at

a higher level and apply what they learned to show evidence of learning or extend learning. The teacher candidate should realize that they are key initiators for this to be present in a lesson. Incorporating higher-order thinking into a lesson will not happen by chance – it is purposefully planned and executed by intention. Teachers, how they set up the task, and how they interact with their students shape the learning environment and can optimally foster the mathematical practices or short-circuit what might have been a very positive and powerful learning experience. How teachers promote thinking and facilitate engagement positively relates to how they interact with their students.

- **First, choose powerful teaching strategies** – Also, a suggestion for Rubrics 7 and 9, there are some ways to structure activities that offer more opportunities for higher-order thinking that challenge students in different ways and account for the variety of levels of learners in the classroom. High cognitive demand tasks offer multiple points for students to engage in the task. Using high-demand tasks within the context of the Five Practices for Orchestrating Productive Mathematics Discussions produces rich opportunities for thinking and wrestling with ideas that challenge students' mathematical understandings. This model provides fertile ground for the seeds of thinking to emerge, which can then be tended to and nurtured to grow by teacher interactions that monitor and probe student thinking, make student thinking public, and help students connect mathematical ideas and build bridges of thought. See *Principles to Actions*[1] for an in-depth discussion of the eight effective teaching practices.

- **The task generates opportunities to question** - If the task is structured for such. If teachers interact with students using effective assessing, questioning, and responding techniques, then student thinking begins to emerge. Teachers start to identify levels of thinking, misconceptions, or correct notions about the concepts. Once this occurs, teachers can ask advancing questions to stimulate student thinking to a higher level of challenge. If students give one-word answers, asking students to clarify uncovers more of their thinking, and in the process of speaking, it helps them organize their thoughts. As students talk, a more concrete idea develops and emerges due to them talking and thinking it through.

- **Use predictable ways of teacher-student interactions that foster student thinking** – Once the teacher candidate has structured a lesson where the task has possibilities and opportunities where thought can be challenged at a higher level, it becomes ripe for the teacher candidate to have interactions with students in situations that require students to clarify their ideas and answers, provide justification, explain the reasoning for their answers. Questions posed by the teacher also allow students to show how they can connect ideas and mathematically justify their thinking. Questions are posed so students can revise or extend their understanding using their current knowledge and understanding. Questions are also posed to cause students to react to each other's reasoning and to make sense of differing strategies.

[1] Leinwand, Brahier, and Huinker, 2014, available from www.nctm.org.

- **Stimulate higher-order thinking** – if you ask only yes/no, short answer, or fill-in-the-blank questions, then you are only scratching the surface and not digging deep into student thinking. Plan for and ask students:
    - More open-ended questions.
    - To justify thinking.
    - To generalize beyond the given task into other contexts. "How do we know if this strategy will always work?"
    - To consider alternative strategies and different mathematical representations. "What other ways might we think about …?"

Data and Indicators Captured by A SMT Observation

For a summary of which parts of the quantitative data analysis provide evidence of specific indicators, see the *Users and Training Manual – Specific Features of the Quantitative Data Collection Mode.*

For data on student engagement and how many students are involved in interacting during class, look at whether students are interacting with each other, how the teacher's tendency to respond to students encourages or discourages further responses, which are indicators of rapport, and whether students feel safe to volunteer answers) see:

- For data on which specific students respond and how often they contribute, look at the *Student Engagement* data and the corresponding *Student Seating Chart Heat Map.*
- *For* data on any behavior issues, look at the *Classroom Management* data and the corresponding *Student Seating Chart Heat Map*. Note that you might have some students who typically exhibit behavior issues. The observation data may shed light on the lack of student engagement and lack of contributions from students, or you might be able to write about the differentiation of the lesson and how the data shows it created more of an inclusive environment for students who became engaged in the lesson you are videotaping.

For data on higher level questioning, how you interact with students, the level and number of questions you use in class, and the interaction pattern(S) that predominate teacher-student interactions, see:

- For data on how you asked questions and how you tend to respond to students, look at the *Code Summary* and counts/percentages of using T codes. Also, comparing the time for T counts versus S counts indicates how much of the class was dominated by the teacher versus student talk. Also, include the use of S6-S8 time as that was all the students involved in responding in some manner, either via dry-erase boards, digital devices, or think-pair-share moments, which can add up in terms of student-engaged time. Student-engaged time is a pretty good indicator of a learning environment with rapport.

- For your predominant patterns of interacting (questioning and responding) with students, look at *Interaction Patterns* and the most prevalent patterns. A pattern that encourages sharing ideas would have more open-ended questions. Following student responses, the teacher acknowledges, then asks students to clarify and use their ideas for further consideration by other students.

- Also, look at S-S counts, which show how often students interact with other students by commenting or answering a question instead of the regular T-S-T pattern. Any S-S could be a student responding to another student by asking another student a question or answering a question, or commenting on another student, another sign of a classroom that feels safe enough to contribute ideas without judgment from others.

Documenting Evidence and Indicators from Your Video and SMT For Writing Rubric 6: Learning Environment

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In the space below, using data from SMT observations, document how the candidate demonstrates a safe and respectful learning environment that supports students' engagement in learning in the following ways:

Rubric 7: Engaging Students in Learning

Rubric 7: Engaging Students in Learning - How does the candidate actively engage students in developing conceptual understanding, procedural fluency, and/or mathematical reasoning and/or problem solving?

The guiding question – "The Guiding Question for Rubric 7 addresses how the candidate provides video evidence of engaging students in meaningful tasks and discussions to develop their understanding of mathematical concepts, procedures, and/or reasoning/problem-solving skills".

The essence of Rubric 7 is students need to be engaged in developing procedural fluency from conceptual understanding and developing mathematical reasoning and/or problem-solving skills. Additionally, the teacher draws upon and encourages students to use their personal, cultural, and/or community assets and students' own prior knowledge to support new learning. The type of task that generates this engagement is not teacher-directed or involve blind use of algorithms, but must be a high-cognitive-demand task where students are either engaged in "doing mathematics" (using non-algorithmic thinking to solve a task) or using procedures in ways that make connections to the underlying mathematical concepts in ways that deepen students' mathematical understandings.

Tips For Evidence or Indicators for Rubric 7

1. Strategies - Some strategies for teaching math offer numerous opportunities to produce evidence that fulfills the intent of Rubric 7. The strategy you choose is vital, as some strategies or models of instruction have a great capacity to offer opportunities for students to develop procedural fluency from conceptual understanding and develop mathematical reasoning. For example:

- Use a high-cognitive-demand task that allows students to develop an understanding of the mathematical concepts BEFORE addressing mathematical procedures or algorithms. Students should generate procedures as a natural progression. OR use a mathematical modeling task where students must use their mathematical understandings to decide appropriate solution pathways and/or problem parameters. In either case, appropriate scaffolding is acceptable, but care should be taken so as not to compromise the cognitive demand of the task. Students should be doing most of the mathematical thinking and reasoning, not the teacher.

- Use the *Five Practices for Orchestrating Productive Mathematical Discussions*[2] to design a lesson so that student engagement is an integral part of the lesson. Use a task that offers multiple entry points and solution pathways, allow students to engage with the mathematics in small groups, plan for and ask both assessing and advancing questions for different solution pathways, and select and sequence student work to create a coherent mathematical storyline for a class discussion, ask questions that allow students to find connections between solution strategies, and encourage students to connect and use their prior knowledge and assets (personal, cultural, community).

- Use the *TTLP, LESRA*, *5E*, or *3-Act* model to design a lesson. These strategies all involve setting up an inquiry into the mathematical concept and include launching a high-demand task by having students make sense of the task context. Each has a phase in which students collaboratively (in small groups) explore the mathematical concept being studied. Each also has a phase where teachers and students compile their thinking and offer ideas about mathematical concepts. And each has a phase where students extend their learning to a new setting or situation to see how their learning holds up.

- Plan for and use *discourse moves*. Plan for and locate examples where you used effective questioning, responding, and wait time to elicit students' mathematical understandings and misconceptions. Use revoicing and ask students to revoice others' ideas in their own words. To accomplish this goal, it also means planning for and using assessing questions that get students to tell you what they think and believe and their reasons for such, followed by encouraging more responses from other students, then followed by asking students to tell you more about their thinking, and specifically, pressing for mathematical justification. Encourage students to engage with and make connections from their mathematical understandings to the mathematical understandings of others and their assets (personal, cultural, community). The goal is to support a purposeful discussion that allows students to make sense of the mathematical ideas being studied.

2. Teacher-Student Interactions - How teachers foster thinking, and facilitate engagement, is positively linked to how they interact with their students.

- How teachers interact with students can amplify the potential impact of the strategy being used or completely reduce the potential effectiveness. The best way to describe how the teacher interacts is that they are curious about what students are attempting to do and how that decision came about. They are curious about:
    - What students discovered in the exploration phase when collecting data and what that means.
    - Whether the student is on target or floundering and curious about what students have concluded or not.

[2] Smith and Stein, 2018, available at www.nctm.org

    - What students think they should do next to be more certain about their ideas or conclusions. Curious if the students can transfer what they know to a new scenario.

- Curious teachers ask more open-ended questions, use wait time, listen to students' answers, and ask students to tell them more to clarify their answers and advance their thinking.

- Teachers who are not curious simply overpower student thinking by dumping the correct answer over the top of the student's emerging thinking and swamp the learning boat that was still floating and moving toward a more solid, but perhaps not quite accurate, notion of the concept.

- Teachers ask questions like:
    - What do you notice about…?
    - What does it mean for…?
    - How did you reach that conclusion?
    - Will this strategy always work?

- The teacher interacts to place students' focus on mathematical concepts, the justifications for solution strategies, and the connections between different strategies. Doing so fosters differing viewpoints and perspectives while encouraging open debate and respectfully exchanging ideas.
    - I think that your group might want to compare your strategy with group C – they came up with a different formula, and I wonder if your two groups can talk and figure out why?
    - Let's look at group A's method and compare it to group B's and C's. What do you notice that is similar, and what do you notice that is different?
    - How can these two different equations represent the same situation?

- The learning and task leverage and connect to students' backgrounds, interests, and assets (personal, cultural, community) to help develop new learning. For example, using metaphors based on familiar situations for a group of students, such as after-school jobs or sports. However, the contexts must be relevant *for this specific group of students*. Not all situations are universal, and care must be taken to ensure that the context is not "window dressing" but is familiar and real for this group of students.

Data and Indicators Captured by an SMT Observation

For a summary of which parts of the quantitative data analysis provide evidence of specific indicators, see the *Users and Training Manual – Specific Features of the Quantitative Data Collection Mode.* Focus on the following:

- Code Summary – a comparison of the time used in the lesson on T code activity vs. S code activity, the more significant the S code activity, the greater the student engagement
- Code Summary - for the number of open-ended questions, teacher responses asking students for clarification (T11), teacher responses that ask students to react to other student responses or compare-contrast their answer with one given by another student.
- Seating Chart Heat Map – how student engagement is distributed across many of the students vs. only a few students
- Interaction Patterns – the number of S-S present in the lesson

Documenting Evidence and Indicators from Your Video and SMT For Writing Rubric 7: Engaging Students in Learning

In the space below, using data from SMT observations, document how the candidate actively engages students in developing conceptual understanding, procedural fluency, AND mathematical reasoning/problem-solving:

Rubric 8: Deepening Student Learning

Rubric 8: Deepening Student Learning - How does the candidate <u>elicit responses to promote thinking and to develop conceptual understanding, procedural fluency, AND mathematical reasoning and/or problem solving?</u>

The guiding question – "The Guiding Question addresses how, in the video clip, the candidate brings forth and builds on student responses to guide learning; this can occur during whole class discussions, small group discussions, or consultations with individual students."

The essence of Rubric 8 is all about the teacher candidate's use of questioning and deepening student's understanding - how or if the teacher candidate interacts with students, or fosters student-student interaction, or sets up situations, in a manner that promotes students thinking at a more in-depth and higher level of understanding. While it is ok to start with surface-level questions, the teacher candidate needs to demonstrate higher-level questions and engage students in thinking about the concept at higher levels of thought and understanding. Since individual students differ, a higher level for one student may be different than another, and your narrative would shed light on your video evidence that shows differentiation between students.

Engaging students in the mathematical practices that the Framework identifies as essential for all students to learn to reach the higher levels of Rubric 8:

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

Additionally using the effective teaching practices that the Framework identifies as essential for facilitating student learning to reach the higher levels of Rubric 8:

- Use and connect representations.
- Facilitate meaningful mathematical discourse.
- Pose purposeful questions.
- Build procedural fluency from conceptual understanding.
- Support productive struggle in learning mathematics.
- Elicit and use evidence of student thinking.

Tips For Evidence or Indicators for Rubric 8

Strategies Set the Stage for Opportunities to Uncover Student Thinking
Teachers, how they set up the activity, and how they interact with their students shape the learning environment and can optimally foster mathematical understanding, procedural fluency, and reasoning/problem solving, or short-circuit what might have been a very positive and powerful learning experience. The strategy you choose is essential as some methods or models of instruction have a great capacity to offer opportunities to develop mathematical understanding, which was covered previously in Rubric 7 notes.

1. To get students to begin thinking and then to share their thoughts that help uncover their thinking and level of understanding
How teachers foster thinking and facilitate engagement is positively linked to how they interact with their students. How do teachers, first, get their students to think at a higher level and facilitate much more student-student interactions that are lesson-based and targeted to the mathematical concept being studied?

- Begin by lowering the risk of answering questions - phrasing questions to lower the risk results in students who are more willing to venture a response that might be "correct," which helps the teacher to uncover the student's thinking. For example:
    - Questions that encourage student noticing offer a low-risk opportunity for students to enter into a task. Asking "what do you notice about…?" rarely has "wrong" answers and offers the teacher the opportunity to assess current student understandings.
    - While covered in Rubric 6, asking "what might be a reason for …?" or "if you had to make a guess, what might be …?" are questions phrased to lower the risk of answering and, therefore, generally sparks more student responses. The opposite is asking, "What is going to happen if …?" is a question phrased in a manner that seems to have a specific answer, and therefore fewer students are likely to respond.
    - Also covered in Rubric 6, but especially true if you are asking higher-level questions; you want to pair questions with ample wait time and then give students a chance to think, respond to your question, and respond to each other's ideas. After assessing student thinking, you might pose an advancing question to a small group, then tell them you will be back in a few minutes and that they should wrestle with that question among the group members – simply wait time in another form.

2. To help students build and expand on their ideas and infuse higher-level questions designed to elicit higher-level thinking

- Teachers who ask good questions (often more open-ended than yes/no or factual questions) promote thinking and elicit student responses that uncover more about

student thinking. They also ask questions about the underlying mathematical concepts and have students make connections among mathematical ideas. The teacher presses students for mathematical justification of the work and asks questions that bridge what the student seems to know to a slightly new situation to determine if their thinking is solid, can transfer, and can apply it to the new situation. Questions allow students to build on each other's responses and to self-monitor as they work through a task.

- Approach an interaction with a student with great curiosity as your guide for how to interact. You are on the right track for developing students' understanding of concepts, procedures, and reasoning/problem-solving skills if you ask questions and interact curiously. You display wonder regarding what your students are thinking. You are curious about their strategies and representations, why they are doing it that way, and how they can move their existing thinking forward versus merely trying to funnel them toward a correct answer.

- In your video and when writing your narrative, locate examples where you stimulated student thinking and asked questions that require students to connect to or elaborate on another's reasoning, or what patterns or trends they see, or ask them for clarification on answers they give. Look for examples where you asked for mathematical justification and generalization, possibly extending to other scenarios. Find examples of interactions that tell you students are evaluating their solutions within the context of the problem to determine if they make sense or need to adjust their strategy.

- The teacher-candidate can determine how they meet this expectation by examining the teacher's quantity and types of various questions and responses. Using SMT as a tool for shedding light on this, a teacher-candidate can uncover what they tend to do when interacting with students - when examining the quantitative results and the *Patterns of Interaction*, the significant patterns of interaction are displayed. Or, just by watching the video, they might pick up on patterns of interactions that reflect congruency with structuring the type of intended learning environment. For example, suppose the goal is to get students to think deeply and develop robust mathematical understanding. In that case, a pattern of asking yes/no questions, followed by a student response, followed by clarifying the student's answer (instead of asking the student to explain and tell you more about their thinking) is not a productive pattern to exhibit. Also, the wait-time data and averages are critical factors with potentially huge effects on student engagement if the amount of wait-time utilized is congruent to give students the thinking time needed to wrestle with mathematics.

3. To get students to interact with each other

- Ask students to converse with each other and share what they are thinking, either as individuals, in small groups, or as a whole group, as they work toward generating a consensus response. The book referred to below provides superb guidance on using 3' x 2' small group boards to show data, graphs, conclusions, and explanations that can then

be used with a whole group when comparing task solutions and when attempting to foster student-student interactions centered around mathematical practices. The process and interaction help students verbalize and clarify their thinking and hear another perspective or explanation that might differ slightly or significantly from their idea. Then they compose and wrestle with competing ideas, sorting them out further with the teacher asking them to examine the strength of their understanding in terms of their mathematical reasoning.

- Use teacher actions that foster more student-to-student interactions, such as T12's (asking students to compare and contrast their idea with that just voiced by another student).
- Look at *Interaction Patterns* for the S-S count indicating how many times another student's action followed a student's action. Check specifically for the pattern S5, T12, S5 which shows the teacher specifically asking other students to react to a student's answer.

4. How do we broaden our understanding of what students think or know from just a few samples here and there versus the entire group of students?

- **Using classroom response tools to get ALL students responding -** A safe and respectful learning environment can also be created by using classroom response tools for gathering student responses that provide the teacher with a look at all student responses. Yet those responses remain somewhat private. Knowing what all students know, are thinking, or have learned is the ultimate feedback for how to proceed in the lesson. For example:
    - Dry-erase response boards - When individual students write responses on dry-erase boards, the teacher can easily see all the students' responses. As such, the teacher receives feedback on all students' thinking. For a great resource on using response boards for individual students, pairs, or small groups, check out *Maximizing Student Engagement in the Classroom*[3].
    - Digital responses - Another way to see all students' responses and keep those private (lower risk of responding) is to have students use digital devices to enter answers, such as Desmos or Pear Deck. Student responses can be seen by the teacher, who might anonymously share some ideas with the class to spark a reaction, comparison, conversation, or stimulate or expand thinking on the topic.

[3] *Maximizing Student Engagement in the Classroom* from www.moosemosspress.com

Data and Indicators Captured by A SMT Observation

For a summary of which parts of the quantitative data analysis provide evidence of specific indicators, see the *Users and Training Manual – Specific Features of the Quantitative Data Collection Mode.*

- *Code Summary, Teacher Actions Plus* – Look at the levels of questions posed in the lesson; how many and when questions requiring deeper thinking were used in the lesson.
- Examine the phrasing of questions within the question type.
- *Code Summary, Interaction Patterns, Teacher Actions Plus* - Look closely at how you tend to follow up after hearing a student's response.
- *Wait-Time Summary* – Look at both average WTs and WTs per specific question (WT-1) and response type (WT-2).

Documenting Evidence and Indicators from Your Video and SMT For Writing Rubric 8: Deepening Student Learning

In the space below, using data from SMT observations, document how the candidate elicits responses to promote thinking and to develop conceptual understanding, procedural fluency, AND mathematical reasoning/problem-solving:

Rubric 9: Subject Specific Pedagogy

Rubric 9: Subject-Specific Pedagogy: Using Representation - How does the candidate use representations to develop students' understanding of mathematical concepts and procedures?

The guiding question – "The Guiding Question addresses how the candidate uses representations (e.g., charts, graphs, metaphors, equations) in the clip(s) to build students' understanding of mathematical content."

The essence of Rubric 9 is having students use multiple representations to guide conversations and student explorations. Having students use visual (graphs, diagrams, pictures), symbolic (algebraic, numeric, tables), physical (manipulatives, models), contextual, and/or verbal representations to build mathematical understanding.

Tips For Evidence or Indicators for Rubric 9

1. Planning a lesson and using a task will offer plenty of opportunities for students to use different representations.

- A high-cognitive-demand task is necessary for a lesson that would provide students with opportunities to use and connect different mathematical representations.

2. Interacting in a manner that has STUDENTS conjecturing and exploring based on *their own* choices of representations.

- Like Rubric 7, you need to teach a lesson to look for examples on the videotape where you use a manner of interacting that opens windows into the student's thinking about the mathematical ideas and hear their reasons and justifications for such thinking. They need to use different representations (graphs, tables, equations, diagrams, models) in their mathematical discussions.

- Please don't assume they know how to use different representations. It may be necessary to introduce new representations or discuss possible representations explicitly. It will be necessary to connect different representations as students are making sense of the mathematical ideas and having students use different representations as they reason. Students should be flexible in their use of representations and be able to choose the representation they think will best help them solve the task.

- Ask students to defend their choice of representation. For example, ask: "Why did you choose to use…?" or "What advantages does the graph have over the table?"

- Ask students to make explicit connections between representations and to compare and contrast strategies that use different representations. For example, ask: "How can I see … from the equation in the graph (or table)?" or "Where does … from the problem show up in your representation?"

3. To get students to interact with each other and consider multiple representations

- Ask students to converse with each other and share what they are thinking, either as individuals, in small groups, or as a whole group, as they work toward generating a consensus response. Have students use whiteboards or poster paper to show tables, graphs, diagrams, reasoning, equations, or other representations that can be used with a whole group when comparing solutions strategies that use different representations and attempting to foster student-student interactions. The process and interaction help students verbalize and clarify their thinking and hear and connect to other strategies or explanations that might differ slightly or significantly from their idea. Then they compose and have opportunities to wrestle with competing ideas.

4. Help students learn about the limitations of different representations – ask students to consider the advantages and limitations of different representations, and how one representation may conceal or reveal aspects of the mathematical ideas in ways that differ from another representation. Ask questions like:

- What can I see in the graph that I can't see in the equation?
- What does each of these formulas tell you about the problem?

Data and Indicators Captured by A SMT Observation

For a summary of which parts of the quantitative data analysis provide evidence of specific indicators, see the *Users and Training Manual – Specific Features of the Quantitative Data Collection Mode.*

- *Lesson Summary* – Look for how much time students were engaged in various phases of the lesson and what type of interactions students had within that phase. As students work in pairs or small groups, a sample of student talk might be a good indicator and representation of student-student exchanges during the lesson.
- *Code Summary* – Look at the levels of questions posed in the lesson that are open-ended (T4a and T4b) regarding how many and when questions requiring deeper thinking were used in the lesson.
- *Teacher Actions Plus* – How did the teacher pose a question and then let students interact and engage with each other to choose an appropriate representation, or did the teacher choose the representation for the students and remain the center of the discussion? Look for a question posed by the teacher, then many or at least a few S-type

actions in a row, indicating students are engaged with each other and each other's representations.

- *Video Evidence* - Examine the phrasing of questions within question type that lower the risk of responding; questions that begin with "what might" or "if you had to make a guess" or "how does your representation show…".
- *Code Summary, Interaction Patterns, Teacher Actions Plus* - Look closely at how you tend to follow up after hearing a student's response; how do you respond that encourages more student thinking or talk about the representation they are using?
- *Wait-Time Summary* – Look at both average WTs and the summary below showing WTs per specific question (WT-1) and response type (WT-2).

Documenting Evidence and Indicators for Writing Rubric 9: Subject-Specific Pedagogy: Analyzing Evidence and/or Data

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In the space below, using data gathered from SMT observations, document how the candidate uses the representation to develop students' understanding of mathematical concepts and procedures:

Rubric 10: Analyzing Teaching Effectiveness

Rubric 10: Analyzing Teaching Effectiveness - How does the candidate use evidence to evaluate and change teaching practice to meet students' varied learning needs?

The guiding question – "The Guiding Question addresses how the candidate examines the teaching and learning in the video clips and proposes what s/he could have done differently to better support diverse students' needs. The candidate justifies the changes based on student needs and references to research and/or theory."

The essence of Rubric 10 is all about analyzing teaching concerning the varied learners in a classroom and concerning the whole class. The teacher-candidate demonstrates through video of their teaching and the written reflective analysis that the candidate can examine their teaching through the lens of differentiating instruction and according to the variety of learners in the classroom. There are many things to look for when answering this question. Here is also where the SMT tool can help provide data and evidence when constructing the narrative regarding what the teacher-candidate does and what they might do differently to positively affect more learners. In the teacher-candidates narrative, they analyze their practice and propose the next steps based on varied groups of learners. The teacher-candidate proposes to be backed by research and educational theories, referenced to specific authors and specific research. The narrative should address how you teach and comment, based on the evidence from the videotape, drawing conclusions and suggesting what you might do to have an even more significant impact on student learning. Comments might include what the teacher-candidate would change and how if they taught the lesson again.

Tips For Evidence or Indicators for Rubric 10

- First, students are individual learners and often have unique thoughts about what they observe or conclusions they have drawn regarding the data or activity they have just completed. So, know that if you ask a question to the whole class. One student responds with the correct answer; it does not mean that all students have the same answer. They can correct their thinking to now hold the right answer - the research suggests the opposite (unless you are merely teaching low-level factual material). This is also the case with students in small groups as you interact. Asking a question and getting one response is an Ok starting point, but better if followed by asking others in the group the same question or asking others to reflect on the first answer and compare their response – do they agree or disagree and why? So, it is critical that we use strategies and a pattern of interacting that fosters individual student thinking and uncovers and allows us to see or hear each student's thinking. Mentioned earlier was a resource for

using dry-erase response boards - *Maximizing Student Engagement in the Classroom.* Why? In short, using dry-erase boards becomes a superior and constant formative assessment tool, and when used during a lesson, teachers can draw from student answers to guide their next steps for teaching.

- Second, you can only help students learn if you know what they know or don't know. Therefore, constant formative assessment is a must – the more feedback you can get about your teaching's effectiveness, the more you can alter instruction to benefit the learner. The better off you are in knowing what action to take to have the most impact on learning. You can increase your knowledge of all student responses by using a tool that helps us learn about all students' answers, such as dry-erase response boards for every student or a pair of students, with answers written and then held up for teachers to see. There are also technology-facilitated responses, such as when students use digital devices and software such as Desmos or Pear Deck, allowing the teacher to see all student-generated responses and share some of those responses with the whole group discussion comparison.

Data and Indicators Captured by A SMT Observation

For a summary of which parts of the quantitative data analysis provide evidence of specific indicators, see the *Users and Training Manual – Specific Features of the Quantitative Data Collection Mode.*

- Examining the teacher's quantity and types of various questions and responses allows a teacher to see what they tend to do when interacting with students. They might pick up on patterns of interactions that reflect congruency with structuring the type of intended learning environment. Significant interaction patterns are displayed when examining the quantitative results and the Patterns of Interaction. For example, suppose the goal is to get students to think deeply and develop robust mathematical understanding. In that case, a pattern of asking yes/no questions, followed by a student response, followed by clarifying the student's answer (instead of asking the student to clarify and tell you more about their thinking) is not a productive pattern to exhibit. Also, the wait-time data and averages are critical factors with potentially huge effects on student engagement if the amount of wait-time utilized is congruent to give students the thinking time needed to mentally wrestle with the content.

- SMT has a plethora of data connected to an observation; data is analyzed and displayed via data tables, graphs, and seating chart heat maps. What you analyze and how you conclude are, in part, dependent upon your goals for the lesson you videotaped and are now writing about in your narrative. As a suggestion, build a narrative bridge between

your goals and what students should have done during the lesson to reach those goals. It is not rocket science, but to be clear, if you want students to develop more robust and higher levels of mathematical understanding, then you have to be doing that during the lesson – students need to wrestle with answering questions designed to promote higher levels of thinking. But once again, higher for one student might be lower for another due to individual differences.

- Examples of where to locate data in SMT analysis that might prove fruitful when writing the narrative for Rubric 10 reside in *Summative Form 3,* which walks the teacher candidate through the various quantitative analyses that SMT provides. In addition, the *SMT Quantitative Analyses of Teaching* (at the end of this document) provides a complete guide for all the data that arises from a teacher observation using SMT.

Documenting Evidence and Indicators for Writing Rubric 10: Analyzing Teaching Effectiveness

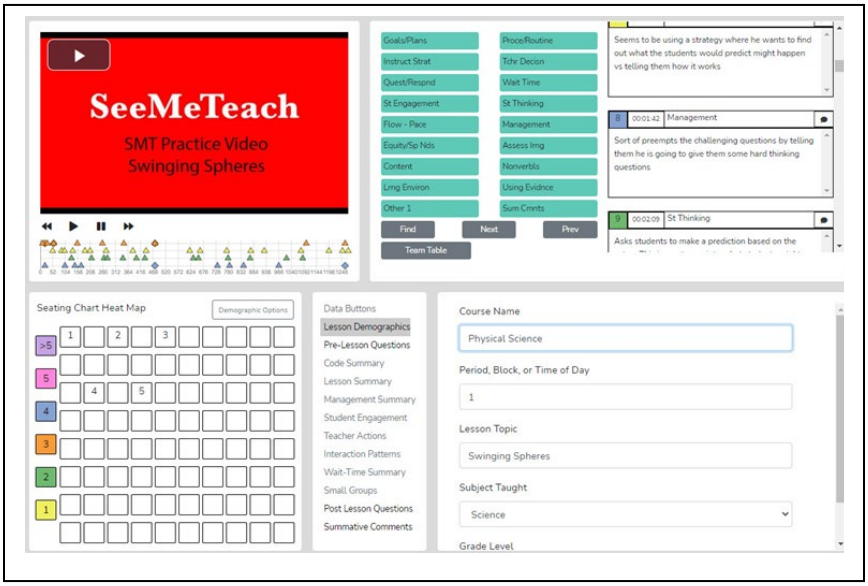
In the space below, using data gathered from SMT observations, document how the candidate uses evidence to evaluate and change their teaching practice to meet students' varied learning needs:

Key Features of SeeMeTeach®

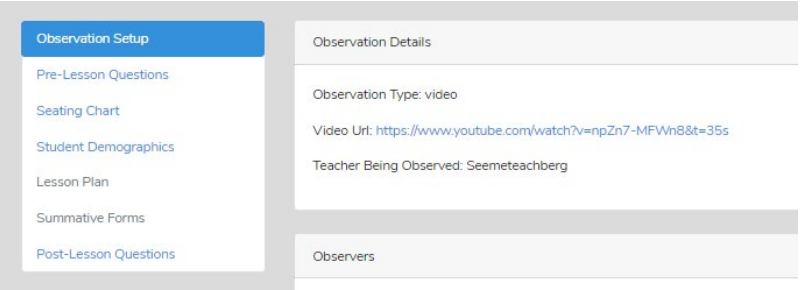
The Qualitative Mode

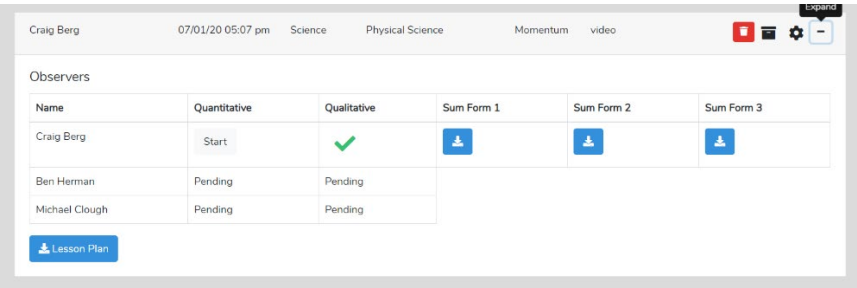
Qualitative Mode - Highlights and Important Features

- Observations can be completed live in the classroom or by using a pre-recorded video or audio.
- The user generates a time-stamped set of observation notes that can include comments and suggestions, color-coded to the specific team member that is making a comment, labeled, and organized by category.
- The user(s) can search and find comments by category.
- Comments are also noted via symbols on the timeline below the video so the user can see who left comments and how many comments are attached to the lesson, then click to read the comment and play the video segment.
- The user can create and tag comments to a student seating chart, thereby noting events and actions by individuals or groups of students.
- When using video, comments are linked to video segments, so the teacher or observer can provide feedback with video examples of the teacher or student actions.
- Summative commentary forms can be filled out, attached, and viewable by any team member. SMT provides some standard forms, or users can also upload and use their own personalized forms as well.
- Provides a platform for the observation team (of up to four people) to collaborate and communicate, and a team member can react to and respond to another team member's comments.

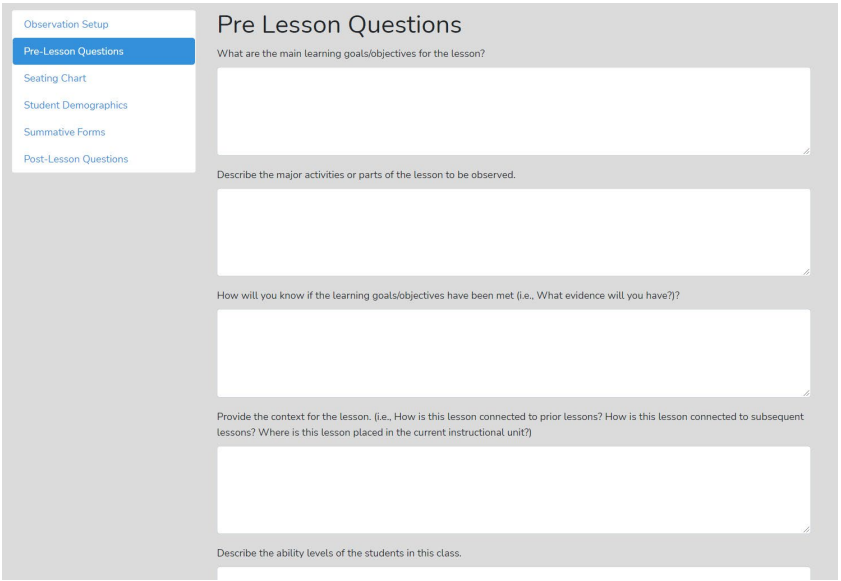


Lesson Plans - Before, during, or after the observation, the observer can quickly access the teacher's Lesson Plans via the Dashboard or the *Team Table*.

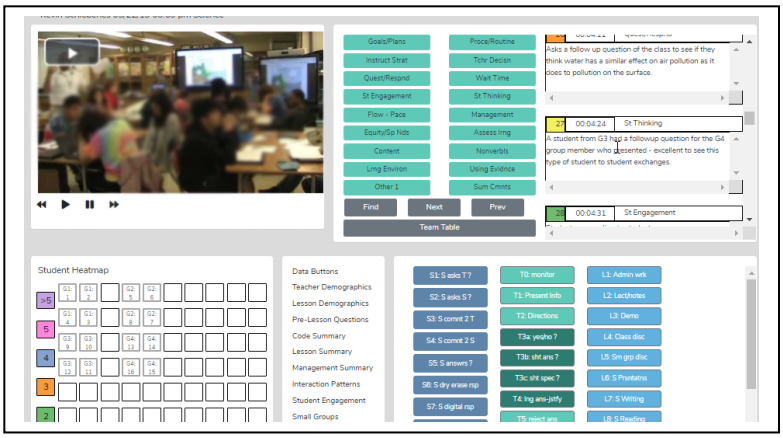




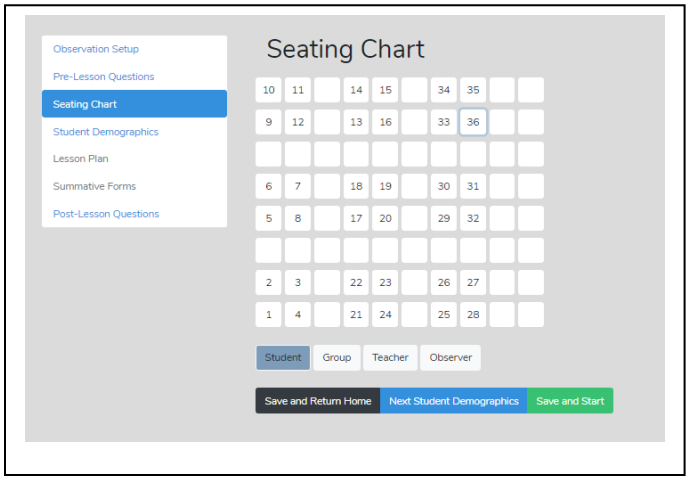
Pre-lesson Questions - To provide the observer with some context and information about the upcoming observation, the teacher can respond to the *Pre-lesson Questions,* which the observer can see via the *Dashboard* or the observation pages.

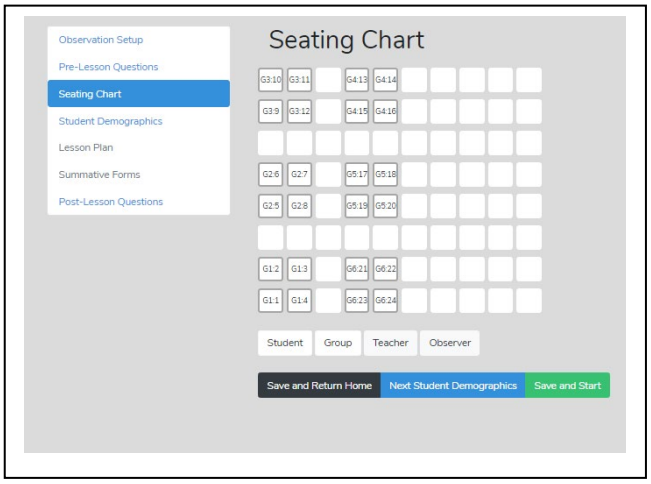


Qualitative Observation Categories and Comments - The observer, or multiple team members, provides comments labeled by categories. There are many comment categories to choose from.

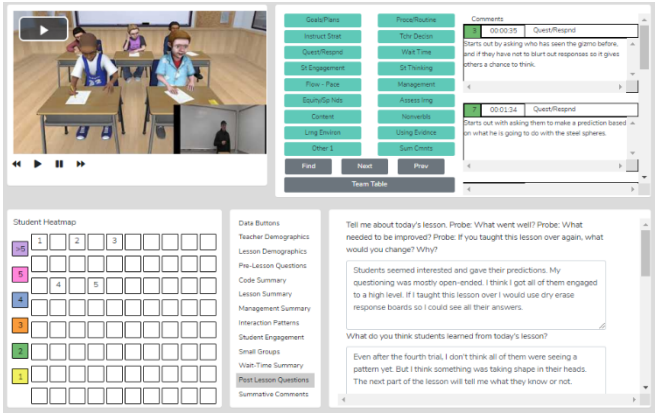


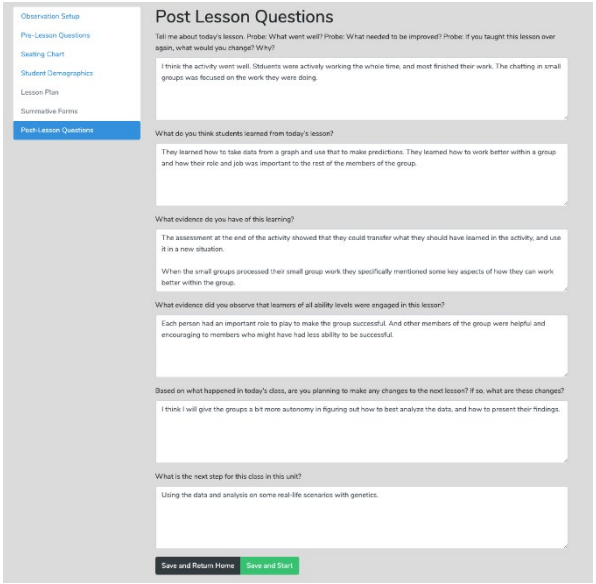
Seating Chart - The teacher or observer can create a *Seating Chart* and refer to this when making comments - showing each student and showing small group designations if desired.



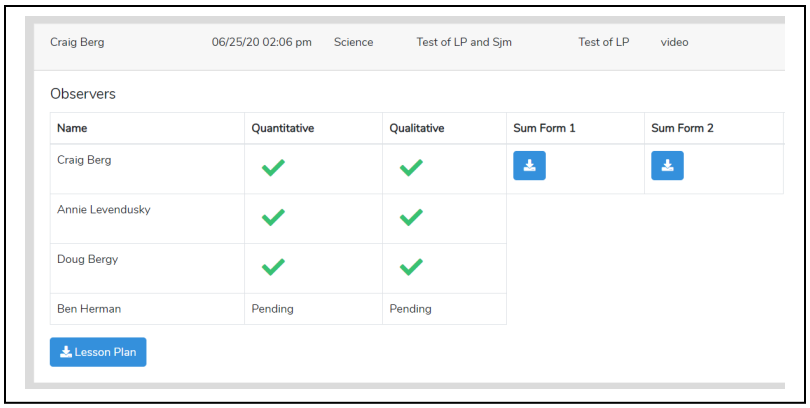


Post-Lesson Questions - To stimulate reflection, post-lesson questions can be filled out or accessed via the settings or the observation/analysis page.

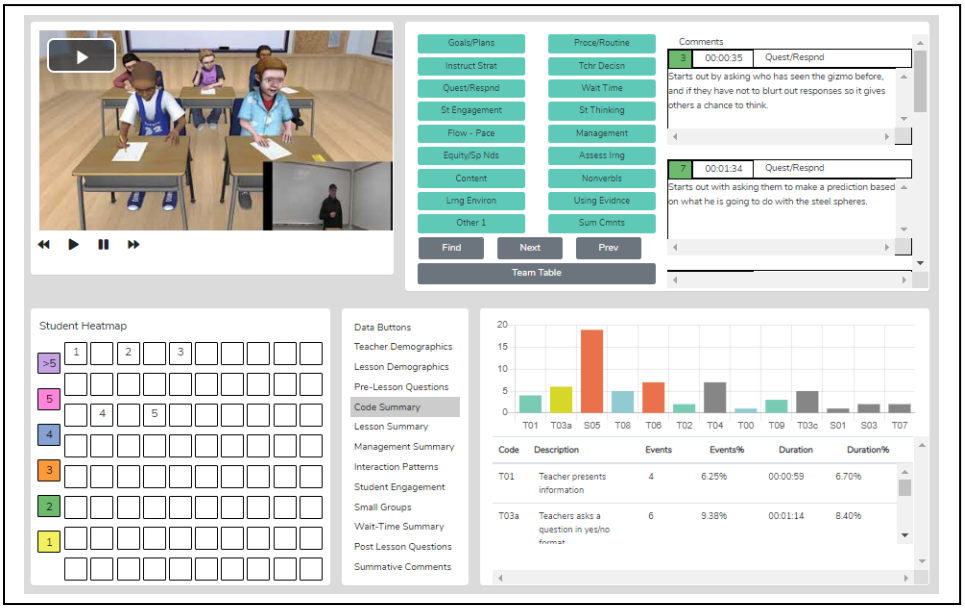




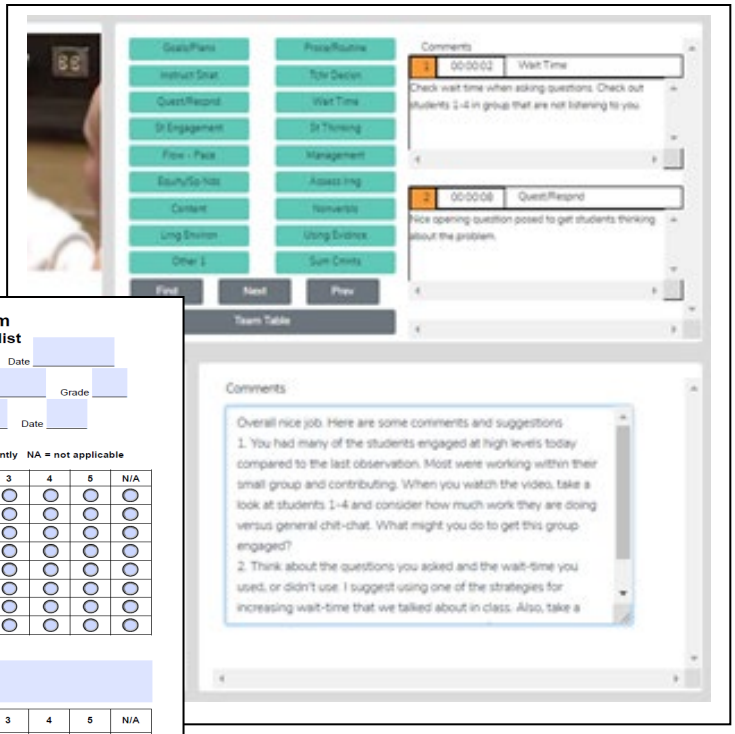
Team Table - A user can choose whose comments (or data/analysis) to view using this feature.

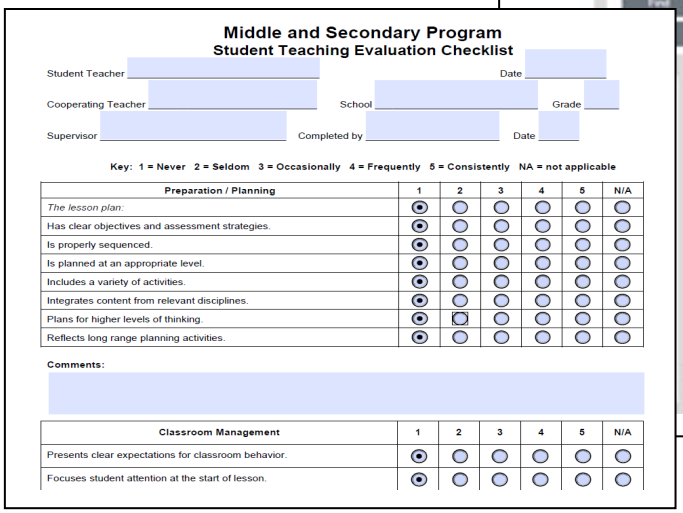


Using Data and Evidence - The observer can use data from the quantitative analysis to bolster comments made during the qualitative comments mode, thereby providing evidence-based feedback, recommendations, and evidence-based coaching.



Summative Comments and Summative Forms - When the observation is over, the observer can add *Summative Comments* and/or fill in up to three *Summative Forms* to share with the observation team.





Middle and Secondary Program
Student Teaching Evaluation Checklist

Student Teacher _____ Date _____

Cooperating Teacher _____ School _____ Grade _____

Supervisor _____ Completed by _____ Date _____

Key: 1 = Never 2 = Seldom 3 = Occasionally 4 = Frequently 5 = Consistently NA = not applicable

Preparation / Planning	1	2	3	4	5	N/A
The lesson plan:						
Has clear objectives and assessment strategies.						
Is properly sequenced.						
Is planned at an appropriate level.						
Includes a variety of activities.						
Integrates content from relevant disciplines.						
Plans for higher levels of thinking.						
Reflects long range planning activities.						

Comments:

Classroom Management	1	2	3	4	5	N/A
Presents clear expectations for classroom behavior.						
Focuses student attention at the start of lesson.						

Suggested Uses - The team member's qualitative analysis might be useful regarding:

- The teaching observation of a fieldwork student or student-teacher by the teacher preparation program supervisor - After the observation, the qualitative analysis page is available to the student-teacher, who can view comments, respond to post-questions, post their reactions and commentary, and fill out the self-reflective *Summative Form*(s).
- When using video for the observation, team interaction and communication can be enhanced as any team member can do a qualitative analysis of that lesson and view any other team member's running commentary and summative comments.
- When using video, all comments are linked to specific video segments so the viewer can see any particular action as it occurred in the classroom.
- Methods of teaching instructors can view the video of pre-service teachers implementing suggested strategies, view pre-service teachers' analyses and reflections, and add their comments or suggestions.
- For a classroom teacher's yearly observation, a teacher can capture a video of their teaching and complete a self-analysis while an administrator completes their own, merging their commentary with that of the teacher. A conversation then follows this whole process. When using video, comments are linked to the video, making it easy to locate any part of the observation and showcase events being discussed, thereby enhancing feedback and coaching sessions.

- Research team members can share data and analysis screens by printing the data and analysis screens or by exporting the raw data to a .xls spreadsheet for more refined and custom analysis.

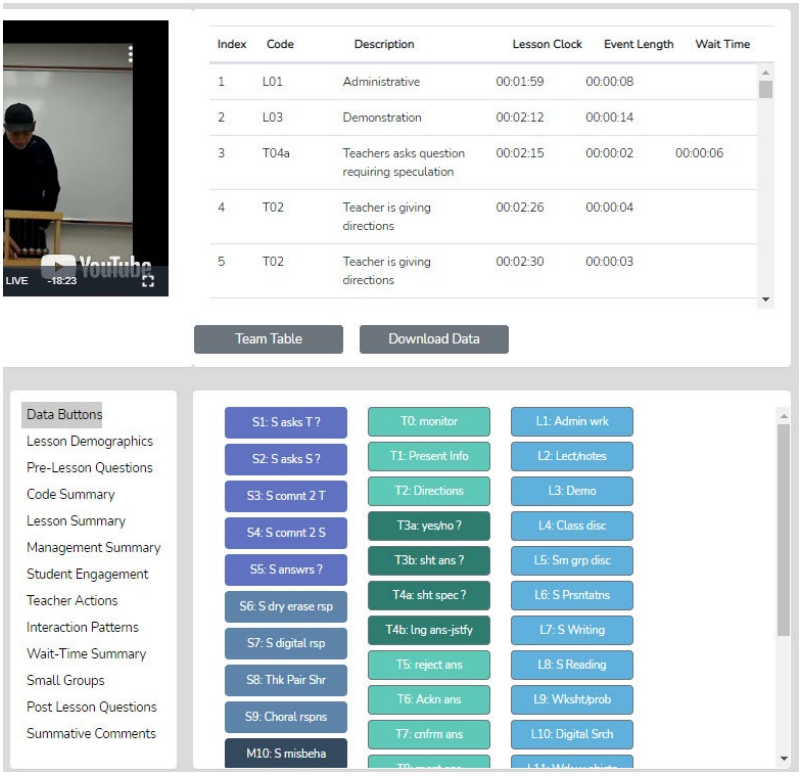
The Quantitative Mode

SMT Quantitative Analyses of Teaching

SMT helps the user collect and then analyze data related to teacher and student actions during a lesson. This data is coupled with the specific lesson type in play to show when and where student and teacher actions occur in lessons. Collecting and analyzing data provides a record of teacher and student actions during the lesson. The raw data is displayed and time-coded, and linked to the events as they took place in the video. The resulting raw data and data analysis offer substantive insights into the activity and events of the lesson. The analysis and feedback options described below will highlight how beneficial it is to use quantitative data during the feedback process.

Power of Video-linked Data - When using video, much of the data collected is linked to the specific video segments representative of that data and the type of action or event by both teacher and students. When looking at the analysis screens, the observer, teacher, or team member can go directly to the video linked to specific data points and see examples in action.

Running Record - The *Running Record* lists all the events in sequence from start to finish. The user can scroll through the events and click on any event to see the related video. While *SeeMeTeach* ® has significant data analysis built-in for instant viewing, also note that the data can be exported to a .csv file to be used with powerful statistical packages.

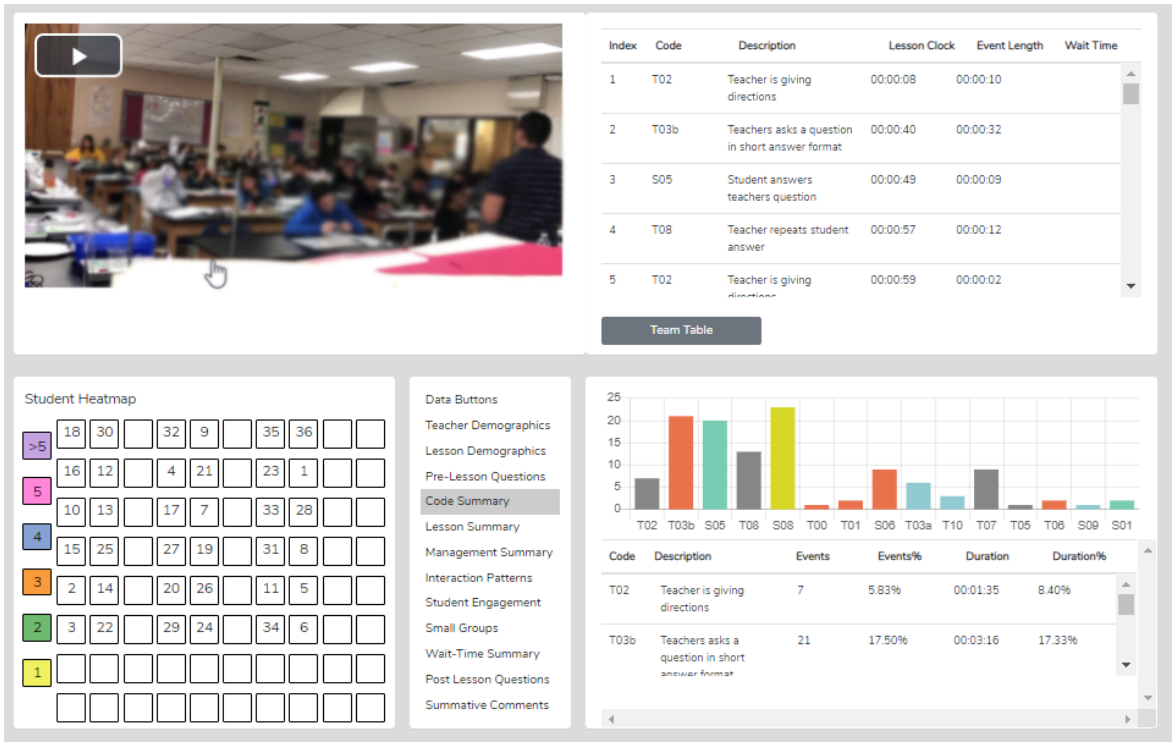


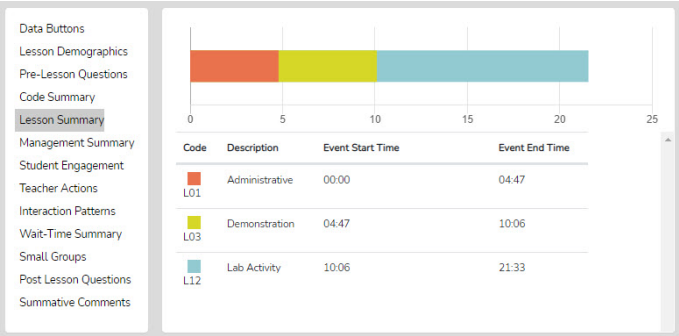
Data Buttons - The *Data Buttons* feature serves as a *Search and Find* function and allows the user to quickly locate linked video examples of specific T, S, M, or U events. Clicking on a button finds the first of that specific code/event in the *Running Record* window, and the linked video begins to play. And at the bottom of the *Running Record* window, there is a note indicating how many events of that type were located. This feature is particularly helpful for identifying the habits and tendencies of the teacher. For example, perhaps the observer noticed the teacher has a habit of asking

yes/no questions, followed by clarifying the answer for the student. In this case, we know that having the teacher change how they interact and react would be beneficial for finding out more about the student's thinking. For example, the teacher could have asked the student to clarify their answer. As such, the observer might choose to use that data or video, all or some, to make a point of how a teacher's choice affects student engagement and their ability to uncover student thinking.

Lesson Demographics – This contains information about the lesson that was entered during *New Observation* lesson setup or can be edited (course name, period, lesson topic, subject, and grade level).

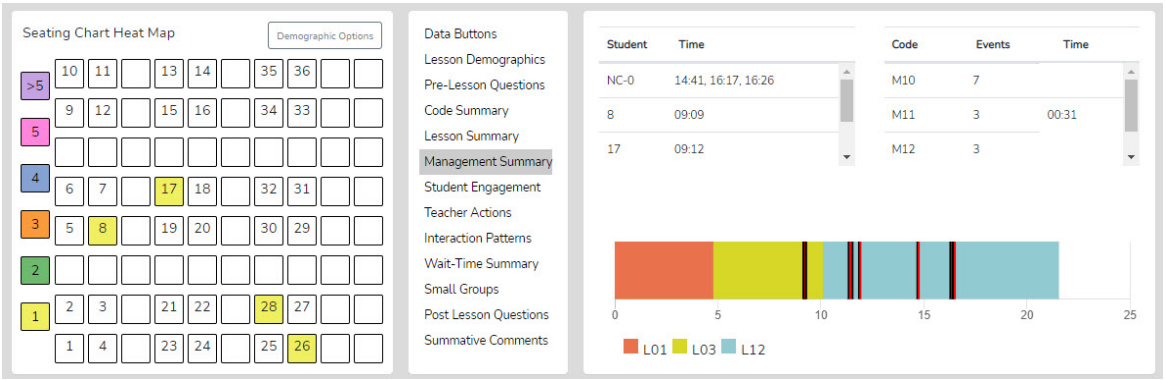
Code Summary – This feature provides a graph of the number of events of each code used during data collection and shows the relative and specific use of T, S, M, and U codes. Underneath the graph is a data table that displays data for each of the specific codes by frequency of an event, frequency of an event compared to the total number of events, amount of time coded by the specific event, and time accrued for that event compared to the total time of all the events. The T code data is tallied underneath this data table, as are the S code, M code, and U code data. This data is also recorded as a percentage of total events and percent of total time.





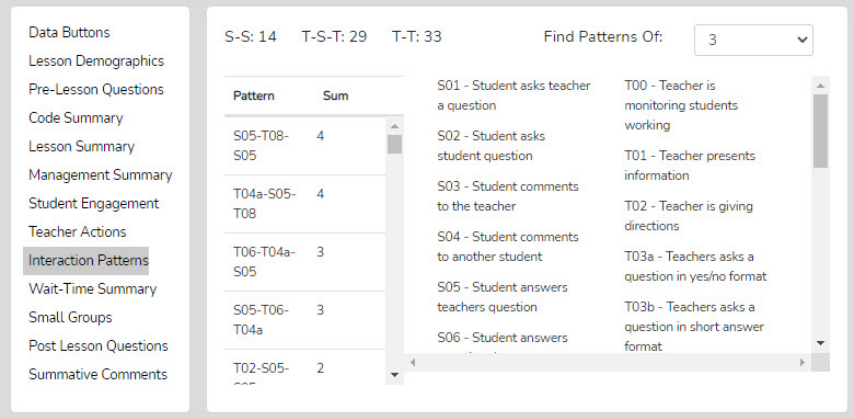
Lesson Summary – When coding a lesson, the observer notes the type of lesson in play by clicking an L button at the very start of the observation and a different L code each time the lesson type changes within the observation. As such, types of lesson segments are noted and displayed in the quantitative analysis mode in the *Lesson Summary* data window as a timeline showing the order and length of each lesson segment. This lesson segment display is used as a time-context reference when looking at other data, such as *Student Engagement or Management Summary,* so the user can see where misbehaviors or students' responses were present in the lesson.

Management Summary – Displays the misbehavior events (M codes), noted specifically by student seating number, or generically if seating chart numbers were not used, and when the events occurred. Also displayed is when and how long the teacher reacted to and addressed misbehaviors. The specific time of occurrence of student and teacher data is displayed on the lesson-type timeline by black bars for student events and red bars for teacher reactions. Clicking on a bar causes the video linked to that event to begin playing. In addition, the seating chart heat map shows by color code how many events are linked to specific students.

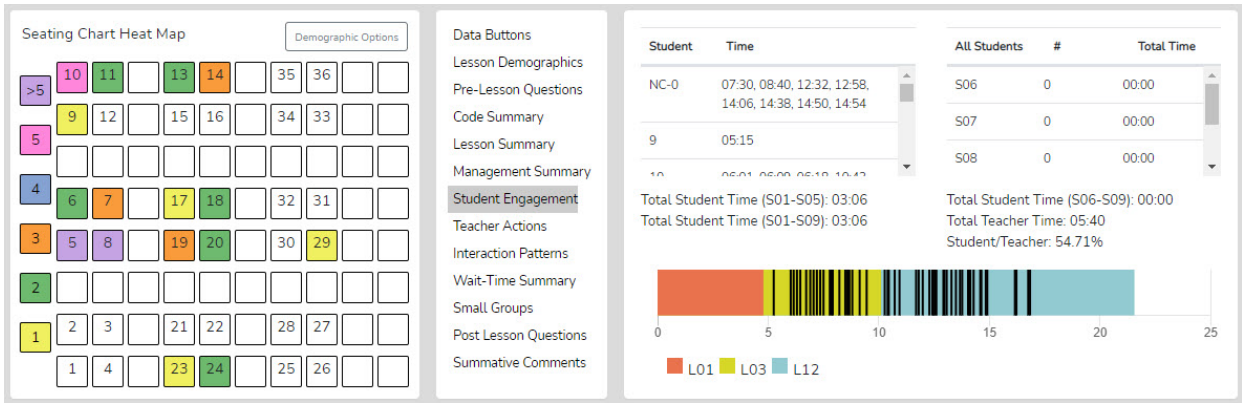


Demographic Highlighting in the Seating Chart Heat Map - In addition, if data is collected for specific students by using the student seat number before entering the M code, then the data can be displayed and toggled on or off by clicking on the Gender, ELL, SPED, or Minority buttons. If the observer should wonder how the students with special needs are disengaged during the lesson, toggle this information to find out. If the observer or teacher is concerned about equity of participation regarding gender, minority, ELL, or students with special needs, then this data is available.

Interaction Patterns – Using all the teacher actions (T codes) and student engagement actions (S codes), the user can view the predominant patterns of interaction between the teacher and students. In addition, numbers are provided that show how often students interact with each other (S-S) versus how often the traditional teacher-student-teacher pattern (T-S-T) is used or how often another teacher action follows a teacher action (T-T).

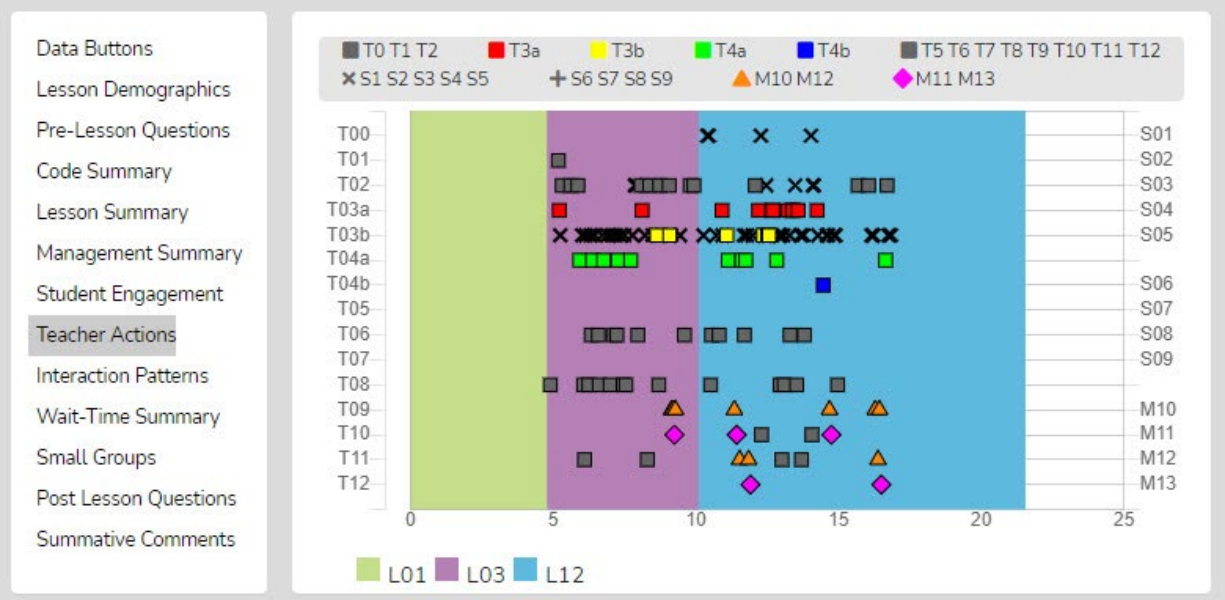


Student Engagement – Displays the student engagement events (S codes), noted specifically by student seating number, or generically if seating chart numbers were not used, and when the events occurred. Also displayed is when and how long the teacher reacted to and addressed the misbehaviors. The specific time of occurrence of student and teacher data is displayed on the lesson-type timeline with black bars for student events and red bars for teacher reactions. Clicking on a bar causes the video linked to that event to begin playing. In addition, the seating chart heat map shows by color code how many events are linked to specific students.

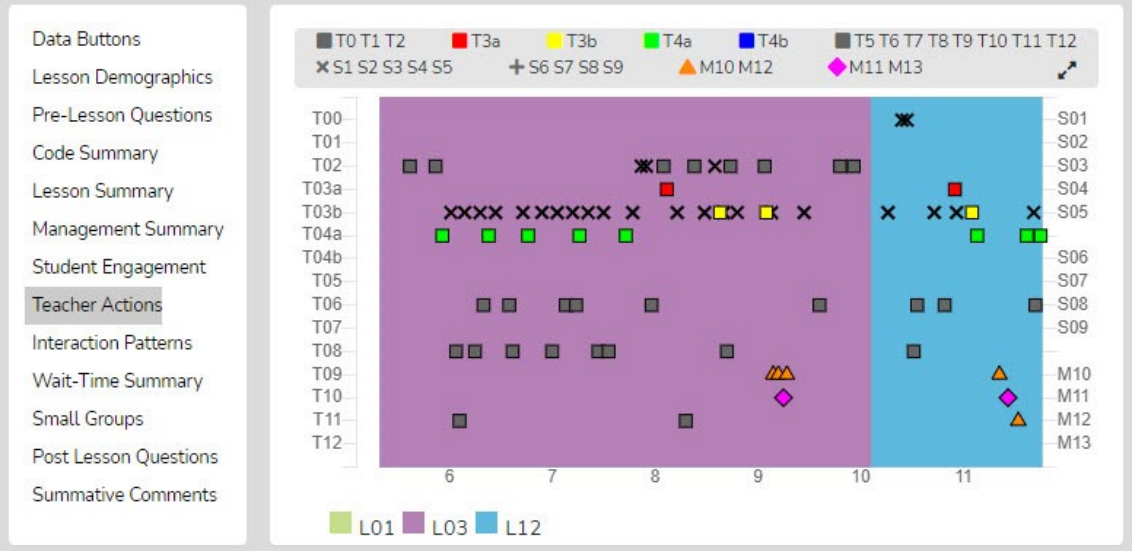


Demographic Highlighting in the Seating Chart Heat Map - In addition, if data is collected for specific students by using the student seat number before entering the S code, then the data can be displayed and toggled on or off by clicking on the Gender, ELL, SPED, or Minority buttons. If the observer should wonder how the students with special needs are engaged during the lesson, toggle this information to find out. If the observer or teacher is concerned about equity of participation regarding gender, minority, ELL, or students with special needs, then this data is available.

Teacher Actions Summary – *Teacher Actions Summary* is a timeline from the beginning to end of the lesson that displays on a backdrop of the lesson type (colors) in play and shows symbols for when the teacher exhibited various T codes actions, so the user can follow the sequence of teacher actions throughout the lesson. Also displayed on this timeline are M and S code data; in truth, almost all data collected are represented on the timeline, which is a robust set of data representing teacher and student actions. The user can easily see when any management issues occur in the context of the rest of the teacher and student actions in the lesson. Since this is a visual display of teacher actions, student actions, and misbehaviors, as well as the teacher's reaction to misbehaviors, it provides the user with a visual of the flow of action from beginning to end of the lesson and visually brings forth sequences, predominate or absence of a teacher or student actions. For example, if the teacher is curious about their use of questioning, it is easy to view when any of the four questioning codes were used and what codes occurred prior to or after. The user may find a complete absence of higher-level questions. The user may readily see what they tend to do following a student's response. The user can target viewing of any codes by toggling on or off the display of any of the T, S, or M codes. Aside from wait-time data, all the data is represented on this summary screen, which is often a large chunk of data and may clutter the screen.

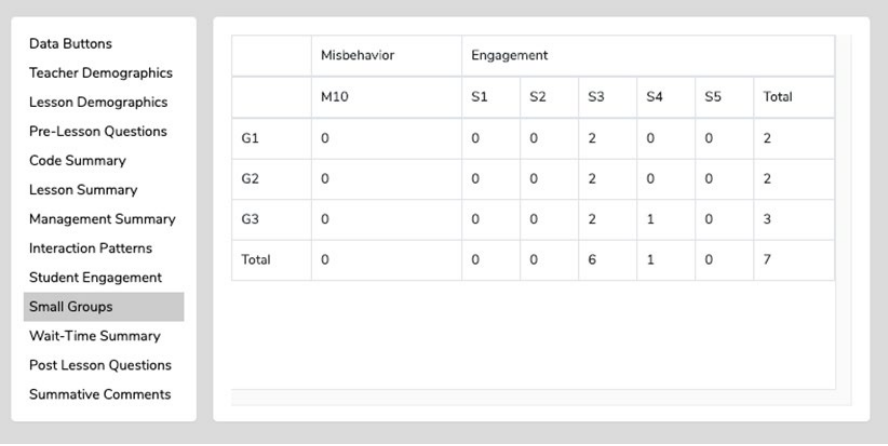


As shown below, the viewer can zoom in or out to enable data points to separate from each other.



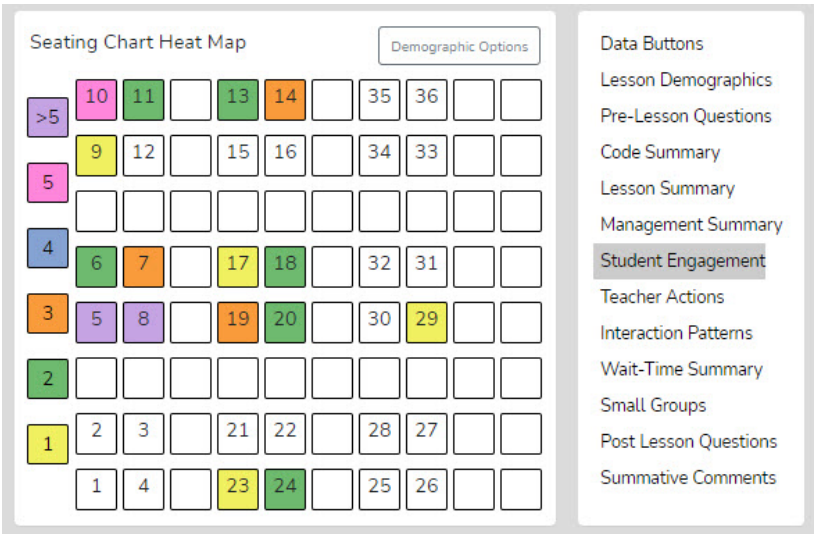
Finally, as with other data points in SMT, the user can click on any data point (symbol), and the linked video will play.

Small Groups – When completing a quantitative observation and student engagement or misbehavior data is collected and tagged by an individual or group number, the observer can then use the *Student Engagement, Management Summary*, *Seating Chart Heat Map,* and *Small Group* analysis displays to examine the results and determine various things about how the lesson impacted small groups.



	Misbehavior	Engagement					
	M10	S1	S2	S3	S4	S5	Total
G1	0	0	0	2	0	0	2
G2	0	0	0	2	0	0	2
G3	0	0	0	2	1	0	3
Total	0	0	0	6	1	0	7

The *Group Summary* data collected in conjunction with the student seating number allows for examining group dynamics and amount and levels of S code type of interactions that reveal the impact of a lesson on student-to-student interactions. The table shows S codes and M10 event responses coming from specific groups. If the teacher and observer wondered how the lesson stimulated student actions (S codes) within the small group, this data would indicate thereof. The *Seating Chart Heat Map* would show how much interaction occurred within that group, color-coding each member's number of contributions.



Wait-Time Summary – The wait-time data is only located within the *Wait-Time Summary.* Within the *Wait-time Summary* are general summaries of wait-time by wait-time type, events, total time, and averages for each wait-time. In addition, the lower half of the summary provides wait-time averages according to a specific teacher or student's actions. For example, the user can determine if more wait-time is allowed with higher-level questions requiring deeper thinking than lower-level questions.