

SeeMeTeach

Training Manual

A Web-based Teacher & Classroom Observation App

SeeMeTeach ® © 2020 V .6.18.2022

Training Manual Table of Contents

1. SMT Training Pathway from Novice to Expert User
2. Graphic of Training Pathway(s)
3. More Detailed Training Level Information
4. Master List for SeeMeTeach ® Training and Practice Videos and YouTube Links
5. Training Lessons and Practice Sessions

Core Training

- Training 1 - Acclimating to SMT: Setting Up a Lesson
- Training 2 - The Qualitative Comments Mode
- Training 3 - Basic Information for Using the Quantitative Mode

Post-Core Options

- Training 4 - Learn About M Codes: Student Misbehaviors and Teacher Reactions
- Training 5 - Learn About S Codes: Student Actions, Engagement and Using the Seating Chart
- Training 6 - Learn About Teacher Action Initiating Question Codes: T3a, T3b, T4a, T4b
- Training 7 - Wait-time Simple Method
- Training 8 - Merging Student Actions and Teacher Questioning
- Training 9 - More About T Codes: Teacher Actions 0, 1, 2 and 5 – 12
- Training 10 - Wait-time Regular Method: T, M and S Codes with Seating Chart, and Wait-Time
- Training 11 - Learn About G Codes: Small Group Interactions
- Training 12 - SMT Trainer Status: All Data Collection with Verified Increased Speed and Accuracy

Appendix A: Questions to Ponder Compilation

Appendix B: Learning and Practicing the Teacher Action Codes

SMT Training Pathway from Novice to Expert User

Introduction – This *Training Manual* will first teach the user how to set up a new observation, which is followed by how to use the qualitative mode for adding comments and recommendations to an observation. The third lesson is an overview of the basics of completing a quantitative mode that features a rich and robust set of data collection and analysis features. Most of the rest of the manual is devoted to learning the features and functions of using the quantitative mode. While the quantitative mode involves more training, it is well worth the small amount of time used when considering the plethora of data and evidence obtained and the analyses produced, which can be used for self-reflection, feedback and coaching purposes, or program or grant evaluation.

All users begin with the Core Training to learn the rudiments of setting up an observation and the features of both the qualitative comments mode and the quantitative data collection and analysis mode. Then the user has options for what to learn next as listed in the Post-Core Options below. For example, an observer (or the teacher) might wish to explore student misbehaviors and how the teacher reacts or responds to such using Training 4. Or the observer might want to collect and examine wait-time use and averages without collecting any other data using Training 7. Or they may want to examining student actions and engagement (Training 5), or teacher actions and decision-making (Training 6). Any of these four trainings are options following completion of the core training.

Ultimately, to proceed forward on the preferred pathway for becoming an SMT user who can collect all types of data, the SMT Team has laid out a path that begins with the Core Training and continues on to Training 5 and Training 6 before adding on additional data collection features as the user proceeds to higher levels of training. See Figure 1 below for options and pathways.

Core Training

Training 1 - Acclimating to SMT: Setting Up a Lesson

Training 2 - The Qualitative Comments Mode

Training 3 - Basic Information for Using the Quantitative Mode

Post-Core Options – Any of these can follow the Core Training

Stand-alone Data Collection

- Training 7 - Wait-time Simple Method (Note the Simple Method is a stand-alone data collection and not merged with another data collection whereas Training 10 connects Regular Wait-Time data collection with specific teacher and student actions.)

Stand-alone or Merged with Other Data Collection

- Training 4 - Learn About M Codes: Student Misbehaviors and Teacher Reactions (Note that M code data collection can be the only data collected or collected at the same time as student or teacher action data.)
- Training 5 - Learn About S Codes: Student Actions, Engagement and Using the Seating Chart
- Training 6 - Learn About Teacher Action Initiating Question Codes: T3a, T3b, T4a, T4b

Post-Core Preferred Pathway

Apart from collecting data on student misbehaviors and the teacher's reaction, the following is a suggested order of training to learn and combine the various targets of data collection. Following the Core Training, if the user is concerned about misbehaviors, begin at Training 4, then move to 5 or 6. If the user wants to target student engagement, then begin at 5 and then add 6. If the user wishes to focus on the teacher's use of questions, then begin at 6 and follow it with Training 5. Both Training 5 and 6 should be completed prior to beginning Training 8.

Training 5 - Learn About S Codes: Student Actions, Engagement and Using the Seating Chart

Training 6 - Learn About Teacher Action Initiating Question Codes: T3a, T3b, T4a, T4b

followed by

Training 8 - Merging Student Actions and Teacher Questioning

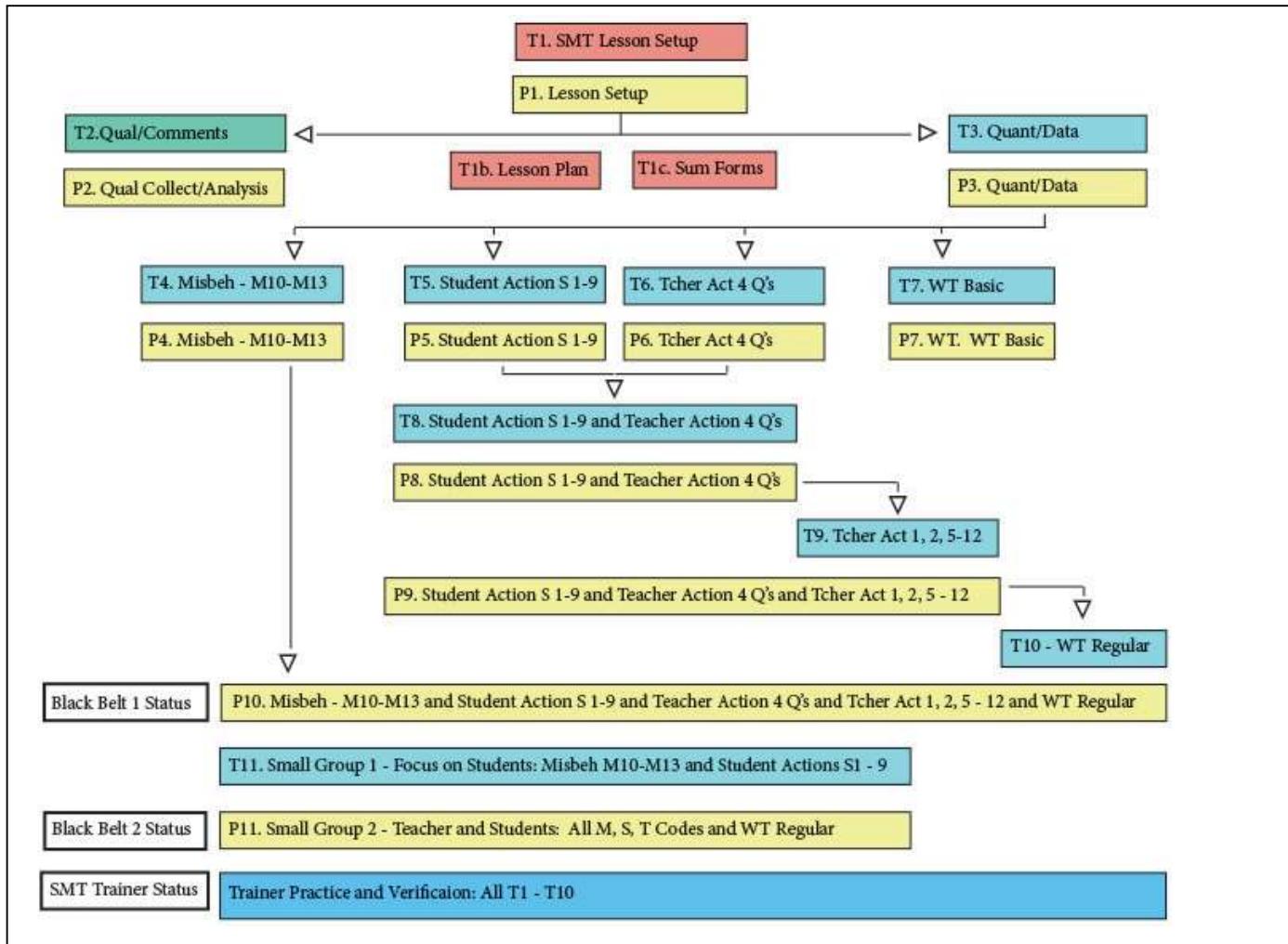
Training 9 - More About T Codes: Teacher Actions 0, 1, 2 and 5 – 12

Training 10 - Wait-time Regular Method: T, M, and S Codes, using a Seating Chart, and Wait-Time
[Black Belt 1]

Training 11 - Learn About G Codes: Small Group Interactions
[Black Belt 2]

Training 12 - SMT Trainer Status: All Data Collection with Verified Increased Speed and Accuracy
[SMT Trainer]

Figure 1: Training Options and Pathway



Recognition of a User's Skill Level

Skill and proficiency of using SMT is recognized by training levels completed and with Black Belt 1, Black Belt 2, and SMT Trainer status.

More Detailed Training Level Information

Black = Narrative Overview and Instructions

Blue = Video Overview

Green = Practice

Training 1 – New Observation Lesson Setup

[Lesson 1.0: Video Overview - Acclimating to SMT](#)

Lesson 1.1: Learning About New Observation Settings

[Lesson 1.2: Practice - Setting Up a New Observation](#)

Training 2 - The Qualitative Comments Mode

[Lesson 2.0: Video Overview - Using the Qualitative Mode](#)

Lesson 2.1: A Quick Look at Specific Features of the Qualitative Comments Mode

[Lesson 2.2: Practice - Completing a Qualitative Comments Observation](#)

Lesson 2.3: A Quick Look at Specific Features of the Qualitative Analysis and Feedback Mode

Lesson 2.4: Completing a Qualitative Analysis

Training 3 - Basic Information for Using the Quantitative Mode

[Lesson 3.0: Video Overview - Quantitative Data Collection Screen](#)

Lesson 3.1: The Quantitative Data Collection Screen

Lesson 3.2: Two Types of Codes for Collecting Data

Lesson 3.3: Basic Rules and Options

Lesson 3.4: L Codes – Type of Lesson in Play

Training 4 - Learn About M Codes: Student Misbehaviors and Teacher Reactions

[Lesson 4.0: Video Overview - M Codes](#)

Lesson 4.1: M Codes Defined

Lesson 4.2: Setting Up a New Observation

[Lesson 4.3: Practice - Data Capture Using M Codes](#)

Lesson 4.4: M Code - Student Misbehavior and Teacher Reaction Data Analysis

Training 5 – Learn About S Codes: Student Actions, Engagement and Using the Seating Chart

[Lesson 5.0: Video Overview - Using M and S Codes, Seating Chart and Data Analysis](#)

Lesson 5.1: S Codes Defined

Lesson 5.2: New Observation Setup and Seating Chart

[Lesson 5.3: Practice - Data Capture Using S Codes with a Seating Chart](#)

Lesson 5.4: S Code – Student Engagement Data Analysis

[Lesson 5.5: Practice - Data Capture Using M and S Codes with a Seating Chart](#)

Training 6 – Learn About T Codes: Teacher Actions and Behavior – The Four Question Types

[Lesson 6.0: Video Overview - Using and Remembering T Codes](#)

Lesson 6.1: T Codes Defined/Examples

Lesson 6.2: Learning and Practicing Identifying T Codes on Paper

[Lesson 6.3: Practice - Data Capture Using T Codes with Video](#)

[Lesson 6.4: Video Overview - T Code Data Analysis](#)

Lesson 6.5: T Code - Teacher Actions Data Analysis

Training 7 – Wait-time Simple Method

Lesson 7.0: Video Overview – Collecting Wait-time Data Using the Simple Method

Lesson 7.1: The What and Why of Using Wait-time

Lesson 7.2 The How To of Collecting Wait-time Data

Lesson 7.3 Analyzing Wait-time Data

Training 8 – Merging Data Collection of Both Student Actions and Teacher Questioning

Training 9 – More About T Codes: Teacher Actions and Behaviors - 0, 1, 2 and 5 – 12

Training 10 – Wait-time Regular Method: Incorporating T, M, and S Codes, Using a Seating Chart, and Wait-Time

[Lesson 9.0: Video Overview - Using T, M, and S Codes, Seating Chart and Wait-Time](#)

Lesson 9.1: About Collecting Wait-Time

[Lesson 9.2: Practice - Data Capture of T, M, and S Codes, Seating Chart and Wait-Time](#)

Lesson 9.3: T, M, and S Data Analysis Using Seating Chart and Wait-Time

Training 11 – Learn About G Codes: Small Group Interactions

[Lesson 8.0: Video Overview - Data Collection and Analysis Using G Codes](#)

Lesson 8.1: Introduction to Group Setup

Lesson 8.2: Setup for Groups in the Seating Chart

Lesson 8.3: Collecting Group-related Data

Lesson 8.4: G Codes - Group Actions Data Analysis

Practice 11 – Small Group Actions and Teacher Interactions

Training 12. Trainer Practice and Verification - Black Belt Plus More Speed: T, S, M, and U Codes Seating Chart, Wait-time with Increased Speed and Accuracy

Level 7 - SMT Black Belt: Developing More Speed, Accuracy, Sophisticated Data Analysis, and U Codes

[Lesson 7.0: Video Overview - Data Collection and Data Analysis Using T, M, and S Codes](#)

[Lesson 7.1: Practice - Data Capture Using T, M, and S Codes at Slower Speed](#)

Lesson 7.2 Data Analysis Using For T, M, and S Codes

[Lesson 7.3 Collecting Data Using U Codes - User Identified Labels](#)

[Lesson 7.4: U Code - Data Analysis](#)

Master List for SeeMeTeach ® Training and Practice Videos and YouTube Links

Note that there are overview videos for **each level of training** that provide a first look at specific features or functions. A series of lessons are designed to scaffold the user's expertise from complete beginner to "Black Belt" user status. As the user progresses through training, they will typically first be asked to view the overview video for that section, then read a section in the manual that reiterates and expands on the topic, followed by practicing (in SMT or on paper) what they learned from the video and reading.

The following list contains links to the overview videos and the practice video URLs, which can be copied and pasted into the video URL window when setting up a *New Observation* to practice using SMT at the various training levels. These URLs and links to the video overviews are embedded in each training section.

SMT Web Page Promo	https://youtu.be/EhDVTW5AGY
SMT Training Level 1 Video Overview	https://youtu.be/MwuAilguHUw
SMT Training - How To Add a Lesson Plan	https://youtu.be/IPKZZgcyk44
SMT Training – How To Use Summative Forms	https://youtu.be/FtG7p1AZf3w
SMT Training Level 2 Qualitative Comments Mode	https://youtu.be/tprgqtfq_RA
SMT Training Level 3 Quantitative Mode Basic Info	https://youtu.be/r1MMczuREfs
SMT Training Level 4 M Codes	https://youtu.be/JR5nZ61kAgw
SMT Training Level 5 Using M, S Codes with the Seating Chart	https://youtu.be/FOAuOEPytRo
SMT Training Level 6 T Codes Pt A	https://youtu.be/1Evn9j8e_DQ
SMT Training Level 6 T Codes Pt B	https://youtu.be/fcHEvdz0X-Q
SMT Training Level 7 T M and S Codes	https://youtu.be/bjXvB5RrvOc
SMT Training Level 8 Small Groups	https://youtu.be/8l_RtkGnTy8
SMT Training Level 9 All Codes, Seating Chart and WT	https://youtu.be/_IxHQ1HMoW0
SMT Practice Video Float Sink A	https://youtu.be/oxxazkrBChg
SMT Practice Video Float Sink B	https://youtu.be/k38GViRMJIM
SMT Practice Video Float Sink M	https://youtu.be/uLJ3Jvn0jHw
SMT Practice Video Swinging Spheres	https://youtu.be/XIPKXIkeHMA
SMT Practice Video Truck Hill L	https://youtu.be/pjv0FSyR5sw
SMT Practice Video Truck Hill M	https://youtu.be/YSD7mNBbZ1Q

Level 1 - Setting Up a New Observation

In this lesson, the user will learn:

- How to create a new observation
- The “settings” required before the observation begins
- Factors to consider in terms of which member of the team should set up an observation
- When it is best to set up the observation
- How the quantity of time available before the lesson affects who sets up the observation
- Whether it is necessary to input all the information for a regular start or just the minimal information needed to get started quickly

Steps to Take – First, watch the video overview. Note that the video points out the key areas of the screen and describes features and functions. After watching the video, read through the sections below for a thorough overview of SMT functions.

[Lesson 1.0: Video Overview - Setting Up a New Observation](https://youtu.be/MwuAilguHUw) <https://youtu.be/MwuAilguHUw>

Lesson 1.1: Learning About New Observation Settings

Initial Login

After logging in, the main operational page, called the *Dashboard*, contains a listing of observations that have been set up and perhaps completed and the option to create a new observation using the **New Observation** button. If the user is a first-time user, there will not be any observations listed.

The screenshot shows the SeeMeTeach dashboard interface. At the top, there is a dark header bar with the 'SeeMeTeach' logo, 'Dashboard', and 'Archives' links on the left, and a user profile 'Seemeteachberg' with a dropdown arrow on the right. Below the header is a light-colored main area. In the upper-left corner of this area, there is a blue rectangular button labeled 'New Observation'. The main content area displays a list of five observations, each represented by a horizontal row. From left to right, the columns show: the name of the student (e.g., Kevin Schiebenes, Kimberly Davis), the date and time of the observation (e.g., 01/16/20 08:01 am), the subject (e.g., Science), the class (e.g., AP-Environmental Science), the type of media (e.g., video), and a set of four small icons followed by a '+' sign. The rows are color-coded in a repeating pattern of light gray and white.

Name	Date & Time	Subject	Class	Type	Actions
Kevin Schiebenes	01/16/20 08:01 am	Science	AP-Environmental Science	video	
Kimberly Davis	01/13/20 06:01 am	Science	Biology	video	
Kimberly Davis	01/13/20 05:01 am	Science	Biology	video	
Rachel C Erdmann	12/30/19 02:12 pm	Science	Chemistry	video	
Jasmine Jolitz	12/20/19 01:12 pm	Science	MYP Chem	video	

New Observation: Screens, Choices, and Minimal Information - When clicking on the *New Observation* button from the Dashboard, the first screen presented is labeled *Create a New Observation*. See the figure below and **note that this screen includes the minimal information necessary before the setup can be saved or before the user can start an observation. This primary information will be displayed on the dashboard or before the user can start an observation.**

- **Video Type:** At the top of the *New Observation* screen, the user is prompted to choose whether the observation is video-based or a real-time classroom observation.
 - If the observation is video-based, the URL of the video is entered.
 - Video-based means the user has a video stored in a location like YouTube and can copy and paste that URL into SMT
 - Audio-based means the user captured audio (without video), and this is also stored on YouTube. The analysis is completed while listening to the teacher and student interactions. For the user's purposes, it will be loaded to SMT, like the video.
 - Note that there is a section at the end of this manual on how or where to store the video or audio, so it has a URL address that the user and/or team member(s) can access.
 - Real-time means either the observer is in the classroom using SMT or watching the classroom virtually using an online platform in one window and SMT in another window. No video is captured or saved, and the comments or data are not linked to video segments like they would be when using a video.
- **Team member names:** To save a *New Observation*, the user, at minimum, must enter the name of the *Teacher Being Observed* and the name for *Observer 1*. Note that the user who is logged into SMT and doing the initial setup will, by default, be listed as *Observer 1*. The person teaching the lesson should be chosen as the *Teacher Being Observed*. At this point, the user could start a lesson observation, having put in these two pieces of information.

Suppose there is a second, third or fourth observer. In that case, the user can enter other team member's names or choose names from the dropdown menu if that person was part of the user's team in an earlier observation, accepted your invitation to join SMT so they could be a collaborating colleague with you, or if their name was included as part of your teacher preparation or school group team.

Note: The person teaching should always be listed as *Observer 1* or *Observer 2* because only observers 1 and 2 have set-up rights and can enter or change the setup information or delete an observation from

The screenshot shows the 'Create a New Observation' page. At the top, there are navigation links: SeeMeTeach, Dashboard, Archives. Below that, the title 'Create a New Observation' is centered. The form fields are as follows:

- Video Type:** Radio button selected for 'Classroom observation from video'. The 'Video URL' field contains the value <https://youtu.be/gHSw25jxxxx>.
- Teacher Being Observed:** doc1 Berg
- Observer 1:** Seemeteachberg
- Observer 2:** Rachel C Erdmann
- Observer 3:** John Kish
- Observer 4:** Kevin Schiebenes
- Course Name:** Biology
- Period, Block, or Time of Day:** 4th
- Lesson Topic:** Cells and Membranes
- Subject Taught:** Science
- Grade Level:** Ninth

At the bottom, there are three buttons: 'Save and Start Later' (dark grey), 'Save and Continue' (blue), and 'Save and Start' (green).

the *Dashboard*. If the user is the only person viewing and completing the lesson observation, their name would be listed as the teacher and as observer 1.

Note: At any time, even after an observation has been completed, the user can add more team members to the observation (up to four total team members).

Following input of this minimal information needed to begin an observation, the user can:

- *Save and Continue* (goes to the next screen of settings which contains a list of additional considerations like pre-lesson questions, seating chart, etc.)
- *Save* (saves information that was selected or typed)
- *Save and Start* (the user is asked to choose a qualitative or quantitative mode and then be taken to the screen of the mode they chose, then start the observation).
- *Save and Return to Dashboard* (returns the user to the Dashboard)

Starting and Continuing Setup of a New Observation from the Dashboard

If the teacher (or observer) sets up the lesson observation ahead of time, then clicks *Save and Return to the Dashboard*, the lesson will be listed on their *Dashboard* and on the *Dashboard* of the other members of the observation team who were identified when setting up the lesson (or other members could be added later). At this point, the user could either:

- a) Depart from and log back into SMT when ready for the observation.
- b) Click on the gear symbol to go directly back into settings to add more information, such as a seating chart. (Shown below)
- c) Click on the plus symbol (+) to see the expanded dashboard for that observation and view the basic information regarding the teacher's name, time/date of the lesson, observer names, and the state of completion of observation(s) for the various observers. (Shown below)



The screenshot shows the SMT dashboard with a list of observations and an expanded view for one observation.

Observations:

Name	Date	Subject	Lesson	Type	Actions
Tom Wozniak	01/16/20 11:01 am	Technology	Intro to Programming	video	
Kevin Schiebenes	01/16/20 08:01 am	Science	AP-Environmental Science	video	
Kimberly Davis	01/13/20 06:01 am	Science	Biology	video	

Observers:

Name	Quantitative	Qualitative	Lesson Plan	Sum Form 1	Sum Form 2	Sum Form 3
Kimberly Davis	✓	Pending				
Seemeteachberg	Start	Start				
Joseph Sardina	Pending	Pending				
Anja Blecking	Pending	Pending				

Expanded View:

Name	Date	Subject	Lesson	Type	Actions
Kimberly Davis	01/13/20 05:01 am	Science	Biology	video	
Rachel C Erdmann	12/30/19 02:12 pm	Science	Chemistry	video	

When viewing the expanded dashboard, they can click on the Start button if the user wants to start an observation. Or, if they want to view another team member's results, they can click on the green checkmark. Note the graphic above and three various stages of observation shown under the quantitative and qualitative columns.

1. Start – The user can click this button and start the observation. **Don't start the observation unless you have time to finish it.** You can briefly pause while in the observation, but if you leave the observation and return to the dashboard, you cannot get back into the observation and do more.
2. Green Checkmark – This mark means the observation has been completed. Clicking on the green checkmark will open the data analysis of that observation.
3. Pending – This means the other team member (or team members) still needs to log in to their account and begin the observation.

Adding Additional Information to a New Observation

If, after filling out the minimal information on the *Create a New Observation* screen, the user wishes to add more information to the setup, they should click *Save and Continue*. The next screen presents various options (listed in the upper left-hand corner of the screen) to include *Pre-Lesson Questions*, *Seating Chart*, *Student Demographics*, *Lesson Plan*, *Summative Forms*, *Teacher Demographics*, and *Post-Lesson Questions* (shown below).

The screenshot shows a 'Pre Lesson Questions' form. On the left, a vertical menu lists: Observation Setup, Pre-Lesson Questions (which is selected and highlighted in blue), Seating Chart, Student Demographics, Summative Forms, Post-Lesson Questions, Teacher Demographics, and Lesson Plan. The main area contains four text input fields. The first field is labeled 'What are the main learning goals/objectives for the lesson?' The second field is labeled 'Describe the major activities or parts of the lesson to be observed.' The third field is labeled 'How will you know if the learning goals/objectives have been met (i.e., What evidence will you have?)?' The fourth field is labeled 'Provide the context for the lesson. (i.e., How is this lesson connected to prior lessons? How is this lesson connected to subsequent lessons? Where is this lesson placed in the current instructional unit?)'. Below these fields is a fifth field labeled 'Describe the ability levels of the students in this class.'

The person teaching the lesson can fill this out or click on any one of the other choices in the box at the top left of the setup screen and proceed in or out of order as needed.

- Pre-Lesson Questions – These questions are posed to the teacher being observed before the lesson, including:
 - What are the main goals and objectives of the lesson?

- Describe the significant activities or parts of the lesson to be observed.
 - How will you know if the learning objectives have been met? What evidence will you have?
 - Probe the content of the lesson.
 - How does this lesson connect to prior learning, and how does it connect to subsequent learning?
 - Where is this lesson placed in the current instructional unit?
 - Describe the ability levels of the students in the class.
 - What are you going to do to maximize the engagement of all ability levels of students?
 - How will you differentiate the lesson for all types of learners?
- Seating Chart – For each observation, the user can set up a specific seating chart to be displayed and used during the qualitative or quantitative collection modes. If a specific seating chart is not created, a generic seating chart is displayed with an 8x10 grid.

10	11		13	14					
9	12		15	16					
6	7		17	18					
5	8		19	20					
2	3		21	22					
1	4		23	24					

Seating Chart with Student Numbers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Generic Seating Chart

Individual Student Data

- Individual student data can be captured using the seating chart and the S code (student response) and M code (behavior management) buttons in a situation in which the goal is to better understand how individual students respond or behave in class. This allows the user to capture data on how these students are:
 - Engaged (or not engaged) in answering questions.
 - Interacting with the teacher and/or other students.
 - Behaving (or misbehaving).

Setting up a Seating Chart for Individual Students

- First, to identify where students are seated, click on the STUDENT icon so it turns blue. Then click on a square to identify where the first student is seated. Then click on the next square for the second student and repeat until all student seats have been identified. Finally, click on the STUDENT icon again to deselect it.
 - Note: Click carefully as currently there is no way to undo a mistake.

- To place an indicator for where the observer is sitting in the classroom, click on the TEACHER or OBSERVER icon to turn blue. Then click on a square to identify where the teacher's desk is located or where the observer is seated. Placing these on the seating chart can help both the observer and the teacher with the orientation of the seating chart.
 - Note that once an observation has started, the seating chart cannot be added or changed.

The screenshot shows the 'Seating Chart' section of the SMT application. On the left, a sidebar menu includes 'Observation Setup', 'Pre-Lesson Questions', 'Seating Chart' (which is highlighted in blue), 'Student Demographics', 'Lesson Plan', 'Summative Forms', and 'Post-Lesson Questions'. The main area is titled 'Seating Chart' and features a 6x6 grid of numbered squares. The numbers are arranged as follows:

10	11		14	15		34	35	
9	12		13	16		33	36	
6	7		18	19		30	31	
5	8		17	20		29	32	
2	3		22	23		26	27	
1	4		21	24		25	28	

Below the grid are four buttons: 'Student' (blue), 'Group' (white), 'Teacher' (white), and 'Observer' (white). At the bottom are three buttons: 'Save and Return Home' (black), 'Next Student Demographics' (blue), and 'Save and Start' (green).

Group Summary

A common pedagogical strategy used in classrooms is to group students for labs, discussions, cooperative learning, working problem sets, or for many other reasons. All educators hope that rich and equitable interactions occur and that all small group members are involved in the work and conversation. But small groups are often notorious for having a subset of the group doing most of the work, resulting in the other group members playing a very passive role or conversation and instead diverting their focus to non-lesson related topics. The goal of instruction is to get ALL students involved equitably and productively related to the goals and objectives for that lesson. SMT can help collect data on whether this goal is achieved, and at what level, by collecting data linked to groups identified in the seating chart using *Group Setup*.

Group Setup – When setting up a new observation, the user can designate small groups of students by group number, along with an individual student number, so student behavior and management code data can be prefaced by a group number the student number within that group. After designating student and group numbers, student number 2 in group 1 would have a square that reads G1:2 (Group 1, student number 2, or a student number 15 in group 3 would have a designation of G3:15 (Group 3, student number 15) as shown below.

Also, note that when small groups are represented by Gs in the seating chart, student engagement or misbehaviors can be coded to a specific group (if the question or comment was targeted to the group) or coded to a specific student within that group. What can be learned when collecting individual student interactions within a group? We know that in some small groups, one or two students often dominate the conversation. We also know that a lesson can be structured using roles so that most of the group members will be equally engaged and contribute to the lesson. Using the S codes with a specific G number allows for an examination of such and a look at the specific within-group communication dynamics and engagement.

Setting up a Seating Chart for Groups

- To identify where students are seated in groups first set up your seating chart with individual students using the directions listed above for **Setting up a Seating Chart for Individual Students**.
- When you have finished setting up your seating chart, select a specific number or grouping of individual students in the same group, and then click on the *Group* icon again.
- Then select all of the students in the next group and click on the *Group* icon to denote the second group. Repeat this process until groups are identified.

The screenshot shows the 'Seating Chart' feature of a classroom management software. On the left, a sidebar menu includes 'Observation Setup', 'Pre-Lesson Questions', 'Seating Chart' (which is highlighted in blue), 'Student Demographics', 'Lesson Plan', 'Summative Forms', and 'Post-Lesson Questions'. The main area is titled 'Seating Chart' and displays a 6x6 grid of student seats. Each seat is a small box containing a student ID. The grid is organized into groups: Row 1 contains four groups (G3:10, G3:11, G4:13, G4:14); Row 2 contains four groups (G3:9, G3:12, G4:15, G4:16); Row 4 contains four groups (G2:6, G2:7, G5:17, G5:18); Row 5 contains four groups (G2:5, G2:8, G5:19, G5:20); Row 6 contains four groups (G1:2, G1:3, G6:21, G6:22); and Row 7 contains four groups (G1:1, G1:4, G6:23, G6:24). Below the grid, there are four buttons: 'Student', 'Group', 'Teacher', and 'Observer'. At the bottom, there are three buttons: 'Save and Return Home', 'Next Student Demographics', and a green 'Save and Start' button.

- **Student Demographics** – This feature is for noting gender, minority, special education needs, or ESL/ELL status for each student. It is embedded into the seating chart heat map feature and used to help determine the equity of student engagement or isolate the origins of classroom management issues.

Observation Setup

Pre-Lesson Questions

Seating Chart

Student Demographics

Lesson Plan

Summative Forms

Post-Lesson Questions

Seating Chart

10	11		14	15		34	35	
9	12		13	16		33	36	
6	7		18	19		30	31	
5	8		17	20		29	32	
2	3		22	23		26	27	
1	4		21	24		25	28	

Student Demographics

Student:

Gender

Male

Female

Minority

Yes

No

Special Education

Yes

No

ELL/ESL

Yes

No

Save and Return Home **Next Summary Forms** **Save and Start**

- **Lesson Plan** – The teacher's lesson plan is added during the initial lesson setup or added later by going back into settings using the gear symbol and then clicking on *Lesson Plan*. Using *Browse*, the user locates the pdf file of the lesson plan on their computer, then *Uploads the lesson plan, which needs to be in a pdf format*. The lesson plan can then be viewed before an observation via the *Expanded Dashboard* or viewed post-observation within the *Team Table*.

Lesson Plan How-To Video – <https://youtu.be/IPKZZqcyk44>

Observation Setup

Pre-Lesson Questions

Seating Chart

Student Demographics

Summative Forms

Post-Lesson Questions

Teacher Demographics

Lesson Plan

Lesson Plan

Lesson Plan (PDF)

current file: lesson-plans/94_lesson_plan.pdf

Save and Return to Dashboard **Save** **Save and Start**

© 2020 SeeMeTeach ® All Rights Reserved. - [Terms of Service](#)

- **Teacher Demographics** – This is optional and not used in data analysis but contains some background information about the school and the teacher's educational background.
- **Post Lesson Questions** – The teacher can fill out these questions after the lesson has been taught and the observation has been completed. This set of questions can be answered from within *Settings* or from the *Qualitative/Quantitative Analysis* screen. The Post-Lesson questions include:
 - Tell me about today's lesson.
Probe: What went well?
Probe: What needed to be improved?
Probe: If you taught this lesson over again, what would you change? Why?
 - What do you think students learned from today's lesson?
 - What evidence do you have of this learning?
 - What evidence do you have that learners of all ability levels were engaged in this lesson?
 - Based on what happened in today's class, are you planning to make any changes to the next lesson? If so, what are these changes?
 - What is the next step for this class in this unit?

- **Summative Forms** – The summative forms function is designed to allow the observer and team members to provide summative remarks, provide feedback, or complete scoring using standard forms designed by SMT, or user-designed, fillable pdf forms. Up to three different forms could be used and included for each observation. Once filled out and uploaded to SMT, any observation team member can fill them out or view them via the *Expanded Dashboard* or the *Team Table*.

Summative Forms: Single User vs. Groups - With a single user plan, each individual user decides which *Summative Form(s)* they wish to use for a lesson observation they establish. The group administrator determines which forms the group has access to and uses for observations with a group plan.

There are three quick steps the user takes to incorporate the use of summative forms into an observation.

- Step 1 - Loading Summative Forms Into Your SMT Account
- Step 2 - Choosing Which Forms to Use for a Specific Observation
- Step 3 - Using the Summative Forms Post-Observation

The how-to video and directions below explain this process.

Summative Forms How-To Video - <https://youtu.be/FtG7p1AZf3w>

Step 1 - Loading Summative Forms Into Your SMT Account

1.1 Forms Must Be Fillable pdf: A form must be in the format of a fillable pdf document. The user may choose to use some of the standard forms that have been embedded in SMT or create their own form(s). School districts or teacher preparation programs may use a unique set of forms for observations, which the user would need to modify into fillable pdf forms before uploading them to their SMT account, as described below. Note that more detailed instructions for creating fillable pdf forms are located at the end of this section.

1.2 Upload Forms to SMT Account: The fillable pdf forms are uploaded to the user's SMT account. When the user (single or group administrator) wants to upload the forms to their account for themselves and/or their team of observers, they:

- * Log into SMT
- * Click on the login name drop-down in the top-right corner, and
- * Click on *Custom Summative Forms*.

A *Summative Forms* page is displayed. Note that first-time users will see the following screenshot showing no forms listed.

The screenshot shows the 'Settings' page with a sidebar on the left containing 'Account Details' (selected), 'Invitations', 'Observers', 'Custom Summative Forms' (which is the active tab), and 'Billing'. The main area is titled 'Summative Forms' and contains a table with columns 'Name', 'Type', and 'Actions'. At the top of this area are input fields for 'Form Name' (set to 'Sum Form 1'), 'PDF File' (with a 'Browse' button), and a 'Submit' button. Below the table is a copyright notice: '© 2020 SeeMeTeach ® All Rights Reserved. - [Terms of Service](#)'.

1. The user should identify whether the form will be used for Sum Form 1, Sum Form 2, or Sum Form 3. Note: If the user always wants their observation rubric as the primary form, they should choose Sum Form 1 and type a name for the form into the box labeled *Form Name* - perhaps a short name such as *Obs Rubric*.
2. Use *Browse* to locate the fillable pdf file on the user's computer and click on submit. Note: It is helpful if the file name of the form stored on the computer is close to or matches what the user labels it for use in SMT.
3. Clicking *Submit* adds the form to the column by name and by type of form (1, 2, or 3), as seen below.

The screenshot shows the 'Settings' page with a sidebar containing 'Account Details' (Invitations, Observers, Custom Summative Forms, Billing) and a main area titled 'Summative Forms'. In the 'Summative Forms' section, there is a form for adding a new summative form with fields for 'Form Name' (Sum Form 1), 'PDF File' (Browse, Submit), and a table for existing forms. The table has columns for 'Name' (SMT Qual Stand Sum 1), 'Type' (1), and 'Actions' (Edit Form, Delete). Below the table is a copyright notice: © 2020 SeeMeTeach ® All Rights Reserved. - [Terms of Service](#).

1.3 Changing or Deleting - If the user wishes to change the *Form Name* or change the category from *Sum Form 1* to *Sum Form 2*, they click on *Edit Form*. If they do not want that form to be listed as one of the choices presented when setting up a lesson, they can choose or click *Delete*.

1.4 Different Forms Used at Different Times - Note that some teacher preparation programs might use an observation rubric form and have a mid-term or final summative form used only once during field placement. SMT is designed so the user may load more than one form for each of forms 1, 2, or 3 as they may need different forms at different times. For example, perhaps in a teacher observation program, the observer used a rubric for Form 1, then a Likert scale with comments boxes document for Form 2, and a mid-term OR a final form for Form 3. If both the mid-term and final forms are loaded under Form 3, when the user sets up the new observation, they can switch from the mid-term to the final form when needed. In short, the user can choose whatever forms they wish to use for a specific observation (next section below) if they have loaded the desired forms into their account.

Step 2 - Choosing Which Forms to Use for a Specific Observation

2.1 When setting up a *New Observation*, after completing the initial and basic lesson information entry, the user can click on *Summative Forms*, and there will be dropdown choices listed for *Summative Forms 1, 2, and 3*.

The screenshot shows the 'Observation Setup' page with a sidebar containing 'Observation Setup', 'Pre-Lesson Questions', 'Seating Chart', 'Student Demographics', 'Summative Forms' (highlighted in blue), 'Post-Lesson Questions', 'Teacher Demographics', and 'Lesson Plan'. The main area is titled 'Summary Forms' and contains three dropdown menus for 'Sum Form 1', 'Sum Form 2', and 'Sum Form 3', each labeled 'Pick a Form...'. At the bottom are buttons for 'Save and Return to Dashboard', 'Save', and 'Save and Start'. Below the main area is a copyright notice: © 2020 SeeMeTeach ® All Rights Reserved. - [Terms of Service](#).

Note that the forms found in the dropdown are dependent on what the user loaded into their SMT account. If there are no forms shown for the drop-down choices, the user must complete Step 1 above.

2.2 If summative form choices are present in the dropdowns (shown below), the user can choose which form(s) to use for the observation. For each specific observation, the user may only choose one form for each of Sum Form 1, Sum Form 2, and Sum Form 3.

The screenshot shows the 'Summary Forms' section of the SeeMeTeach interface. On the left, a sidebar lists various setup options: Observation Setup, Pre-Lesson Questions, Seating Chart, Student Demographics, **Summative Forms**, Post-Lesson Questions, Teacher Demographics, and Lesson Plan. The 'Summative Forms' option is highlighted with a blue background. The main area is titled 'Summary Forms'. It contains three dropdown menus labeled 'Sum Form 1', 'Sum Form 2', and 'Sum Form 3'. The 'Sum Form 1' dropdown shows 'Pick a Form...'. The 'Sum Form 2' dropdown shows 'NBCT Form' with a cursor hovering over it, and other options like 'Pick a Form...', 'NBCT Form', and 'Observation Rubric'. The 'Sum Form 3' dropdown shows 'NBCT Form' with a cursor hovering over it, and other options like 'Pick a Form...' and 'Observation Rubric'. At the bottom are three buttons: 'Save and Return to Dashboard' (dark grey), 'Save' (blue), and 'Save and Start' (green).

© 2020 SeeMeTeach ® All Rights Reserved. - [Terms of Service](#)

Step 3 - Using the Summative Forms Post-Observation

Following the observation, the observer's goal is usually to provide feedback on strengths and weaknesses and to offer suggestions for improvement. Well-planned forms help the observer to accomplish this goal. In this last step, the user will learn to fill in the blank fillable pdf form with final comments, summative remarks, or rubric scores, then connect it to the SMT observation so it is available to any team member by clicking on the icon in the *Team Table* or within the *Expanded Dashboard*.

3.1 To fill in a summative form after the observation phase is completed and when the user has either the quantitative analysis or qualitative analysis screen open, click on the *Team Table*, and the user should see the figure below.

Team Table [!\[\]\(72a3e6e8fa524ffb34ac867b25d59d95_img.jpg\) Lesson Plan](#)

09	Quantitative	Qualitative	Sum Form 1	Sum Form 2	Sum Form 3
Craig Berg	<input checked="" type="checkbox"/> On				

Sum Form 1

 [Fillable Form](#)

Sum Form 2

 [Fillable Form](#)

Sum Form 3

 [Fillable Form](#)

Note that if the user who set up the lesson when completing a *New Observation did not choose which summative forms to use* for the lesson observation (as described above in Step 2 - *Choosing Which Forms to Use for a Specific Observation*), then when any member of the observation team gets to the *Team Table*, they would see the following screen showing *No Forms Selected*. In this case, the user who set up the lesson would need to complete Step 2.

Team Table

09	Quantitative	Qualitative	Sum Form 1	Sum Form 2	Sum Form 3
Craig Berg	<input checked="" type="checkbox"/> On				

Sum Form 1

No Form Selected for Summative Form One

Sum Form 2

No Form Selected for Summative Form Two

Sum Form 3

No Form Selected for Summative Form Three

3.2 Note: The next and last step requires the user to have the form on their computer to fill in the pdf, save, and upload into SMT. They may or may not already have this form.

User does not have the form - If the form is not yet on the user's computer, they should first click on the grey box labeled *Fillable Form* (see below). It will open as an extra window in the browser, but this is NOT where users fill in their scores or comments. **Note – it must be first be downloaded to the**

user's computer to fill it in – filling it in within this open window will not save the text or numbers the user adds. The user should download the form to their computer by right-clicking on the form in the window that just opened and *Select*, then *Save As*, the file on the computer. (On a MAC, go to *File* and *Save Page As*.) Then, locate the file where it was downloaded on the computer, open the fillable pdf file, enter comments, numbers, or click on checkboxes. Then save it to the computer with a name that represents the teacher and observation.

Back in the *Team Table*, the user can use the *Browse* button (see below) to locate the file name on their computer, click *Upload*, and after the current quirk of bumping out of the *Team Table*, *they can* re-enter into the *Team Table* to view the icon in the appropriate form column. Now when the user or any team member clicks on the *Sum Form Icon* the pdf will display the form's contents.

The screenshot shows a portion of a web-based application titled "Team Table". At the top, there is a blue button labeled "Lesson Plan" with a downward arrow icon. Below this, the table has columns for "Quantitative" (with a dropdown menu showing "On") and "Qualitative". The next three columns are labeled "Sum Form 1", "Sum Form 2", and "Sum Form 3". Under each of these columns, there is a section labeled "Sum Form 1", "Sum Form 2", and "Sum Form 3" respectively. Each section contains a "Fillable Form" button (with a download icon), a "Select Completed Form" input field, a "Browse" button, and an "Upload" button. The "Upload" button for "Sum Form 1" is highlighted in blue, indicating it has been clicked.

User has the form - If the user already has the blank fillable pdf form on their computer (because they created it or because an institution distributed the required forms), they simply fill it in and save it with a name representing the observation. Then the user can then *Browse* to locate the file and then *Upload* it. Once uploaded in the *Team Table*, an icon will now reside under the column for that summative form (see the figure below). This process can be repeated for each of the three forms, if necessary. Note as seen below that the file name for each summative form used has been added to *Team Table* for help identifying which form has been uploaded. For example, *C. Berg Science Midterm.pdf*.

The screenshot shows the 'Team Table' interface with a 'Lesson Plan' tab selected. A row for 'Craig Berg' is shown with columns for Quantitative, Qualitative, Sum Form 1, Sum Form 2, and Sum Form 3. Each column has an 'On' button and a download icon. Below this, there are three sections for 'Sum Form 1', 'Sum Form 2', and 'Sum Form 3', each with a 'Fillable Form' button, a 'Select Completed Form' input field containing a PDF file name, a 'Browse' button, and an 'Upload' button.

Once finished, the icons for

the summative forms will also now appear in the *Expanded Dashboard* for that lesson, as shown in the figure below. Clicking on an icon opens the summative form for viewing only.

The screenshot shows the 'New Observation' dashboard. It includes fields for 'Observers' (Craig Berg, 07/18/20 09:07 am, live), a toolbar with 'Expand', 'Print', 'Settings', and a minus sign, and a table for 'Sum Form 1', 'Sum Form 2', and 'Sum Form 3'. The table rows correspond to the 'Sum Form' sections from the previous screenshot. At the bottom left is a 'Lesson Plan' button.

Standard Forms for School Districts or Teacher Preparation Programs

A school district or a teacher education program probably uses standard forms for observations. SMT is designed so that the group administrator (leader of the group) for the school or institution can create and add forms to the group account or choose which forms the group members can use for observations. The group administrator is responsible for creating and uploading the fillable pdf forms using the process described in **Step 1 - Loading Summative Forms Into Your Account**. Only the group administrator can add forms for the group. The other members of the group cannot add new forms for the group. Therefore, group members are limited to what the administrator has chosen for the *Summative Form* options. To identify which forms will be used for a specific observation, the user who sets up the observation will choose the *Summative Forms* during the process of setting up a *New Observation*. Then all observation team members (post-observation via the *Team Table*) can fill in the

form and upload it. These forms are then viewable by members of the observation team from the *Team Table* or the *Expanded Dashboard*.

Creating digital Fillable pdf Forms

Most people have heard of a pdf format for a document. A fillable pdf is just like it sounds. The document has boxes for typing text or checkboxes for making checkmarks or boxes for making an X. To create a fillable pdf form, the user must first create a document (probably in Word), then turn it into a fillable pdf document using software such as Adobe Acrobat DC, MAC pdf Element, Microsoft Print to PDF, or Foxit Phantom pdf. Adobe Acrobat Dc is a subscription-based app for creating and managing PDF files, offering Standard and Pro plans. There is also a free trial subscription. As you might expect, many resources show how to create a fillable pdf, including Wiki and YouTube videos.

Who Can Create a New Lesson (Setup) Observation and When - Setting up a new observation can be completed ahead of time or just before starting the observation? Factors to consider are:

- 1) How much time the observer has available before the start of the lesson
- 2) How much the observer knows about where students will be seated in the classroom and knowledge of students' demographics
- 3) Whether a specific seating chart with student demographics is important for the observation or if a generic seating chart without student demographics will suffice.

The answers to questions 1-3 will determine whether the teacher or the primary observer is better positioned to set up the lesson. But realize that while the teacher who is being observed might do the initial setup of the lesson observation, if desired, the primary observer can complete any remaining parts of the setup before the observation, or vice versa.

There are some advantages to having the teacher set up the new observation. For example, the teacher knows the students' classroom seating chart and demographics, whereas the observer probably does not know this ahead of time. Once within the classroom, the observer can see where students are seated and perhaps note some of the demographics, but if special education or ELL is an important factor, and that factor is present for analysis, then the teacher, not the observer, is most likely the person who should enter the complete demographic information. Only when a specific seating chart has been created can student demographic information be entered (before or after the observation), and then, in the future, student demographic information will be used for analysis in association with the heat map of the seating chart. The heat map is simply a colored coded student seating chart showing levels of student engagement or misbehaviors from zero to > 5. Note: The generic seating chart does not allow for student demographic-specific analyses.

Time Available Before the Start of the Observation

Suppose the user needs to start a lesson observation in a short amount of time. In that case, they can do a "quick-start" by entering only the minimal information on the first screen of New Observation and quickly starting the observation. If more time is available, the user can do a regular start and enter as much information as desired.

Quick-Start for a Live Observation – This feature is designed for the observer who is planning on doing a live observation and has very little time before the start of class. The time needed to complete this setup is about one minute and designed to get the user into the live classroom observation quickly, bypassing some of the teacher demographic information, which can be typed in after completing the observation.

A quick start can be used:

- Suppose the teacher completes the minimal setup required to establish an observation on the Dashboard ahead of time. In that case, another team member can log in to their *Dashboard* and start the observation immediately.
- When a generic seating chart without student demographics is suitable for the observation, the observer arrives at the classroom 1 - 2 minutes before the start of the class and wants to input minimal information to set up a new observation in time for when the bell rings.

Steps to Begin a Quick-Start Observation

1. Click on New Observation
2. Enter the minimal information needed to begin an observation:
 - Choosing whether the observation is video-based or a real-time classroom observation.
 - If video-based or audio-based, enter the URL of the video or audio
 - Team member names: Minimally, the user must enter the name of the teacher and primary observer (or choosing from dropdowns).
 - Adding in the course name, period, lesson topic, subject topic, and grade level.
3. Then click *Save and Start* if the user wishes to begin the observation. Or, if time allows *Save and Continue* to continue with lesson set up. Or, if starting the observation later, click *Save and Return to Dashboard*.
 - If *Save and Start* is chosen, the user is then prompted to choose **Quantitative or Qualitative** mode. Once a mode is chosen, the observation and data collection screen opens, and the user begins.

Regular-Start – This should be used when the observer has roughly 5-10 minutes preceding the observation. The teacher who is being observed or the observer can type in most of the *Settings* information before the observation.

Post-Observation

Note that once the observation is complete and the user clicks *Done*, various steps can be taken, such as data analysis for the quantitative and/or qualitative data can be viewed.

- If there was a specific seating chart created before the observation, but student demographics were not added at that time, student demographics information could be added at any time post-observation.
- Additional team members' names could be added post-observation, allowing them to complete a quantitative observation and/or a qualitative observation if the lesson was set up to be a video-based observation.

- To add either student demographics or additional team member names, the user can go back to *Settings* on the *Dashboard*, click on the *Settings* icon (gear symbol) and add the information. Note that post-lesson questions are also found in *Settings* or can be accessed from the *Post Lesson Questions* button on the analysis page.
- Note: If the user completed a live observation, additional team members could view the data analysis and feedback from that observation, but without video, no video would be linked to the data. The additional team members could also view pre-lesson and post-lesson question responses and can fill out summative forms. For example, suppose the university supervisor was doing a live observation. In that case, the student-teacher (who taught the lesson) and their cooperating or mentor teacher (who watched the lesson) might fill out their reactions and comments using the summative form(s).

Using Video or Audio Recording Presents More Options - Observers can choose to use either the qualitative or the quantitative modes for a live observation. For an observation that uses video or an audio recording, however, an observer can do qualitative, quantitative, or both as once the lesson is set up, the observer can complete one mode then the other. This also means that when using video or an audio recording, it is possible to have all team members complete a qualitative and/or a quantitative observation making for very rich data, analysis, and feedback.

Dashboard – Archiving Observations – the file folder symbol is used to archive a lesson observation when the observer wants to retain it but decrease the clutter and reduce the number of observations on their Dashboard. Only observer one and observer two can delete or archive a lesson. Note that at this time, once archived, the lesson cannot be brought back into the main screen Dashboard. So, think twice before archiving any lesson.

Lesson 1.2: Create a New Observation – Before the user creates their first new observation, they should have read the preceding pages and watched the video overview - <https://youtu.be/MwuAilguHUw>.

After reading this section, they should use SMT to set up a practice observation, which will be a qualitative observation completed in Level 2 Training.

- a. Click on *New Observation* to bring up a new screen titled “Create a New Observation.” Choose video-based observation, then copy and paste this URL <https://youtu.be/pjv0FSyR5sw> for *SMT Practice Video Truck Hill L*.
- b. Since the person teaching the lesson is not a member of your observation team, and you won’t find their name in your dropdown list of team members, simply click on yourself as both the teacher and primary observer for this practice observation.
- c. In the box for *Lesson Topic*, type *Lesson 2.2 Practice*.
- d. With this information entered on the main settings screen, click on *Save and Return to Dashboard*.

This is the end of Training Level 1. Congratulations, you just set up your first observation!

Looking Ahead to the Next Lesson

The completed lesson setup will be used in Lesson 2.2, where the user will be asked to start and complete a qualitative observation.

Level 2 – The Qualitative Comments Mode

Introduction – The qualitative comments mode allows the user to observe and make comments. With SMT, the comments are:

- time-stamped and labeled/organized by comment categories
- color-coded to the specific team member that is making the comment
- linked to the video segment related to the comment (if using a pre-recorded lesson)
- locatable using a search and find function to help locate comments of a specific type
- also noted via symbols on the timeline below the video so immediately the user can see who and how many comments are attached to the lesson, then click to read the comment and play the video segment

In addition, there is a team member feature that allows any team member to view any other observer's comments.

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, as well as add their own 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.
- 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 (coming soon).

In this lesson, the user will learn:

- Which of the many qualitative comments schemes to use for your intent of the observation.
- How to complete a qualitative observation by adding qualitative comments that are timestamped and linked to the video segments.
- Post-observation, how to view the comments and watch the video segments linked to the data.
- How to search and find comments headed by comment labels and categories.
- How to toggle on or off other user's comments.
- How to react to other user's comments.

- How to enhance qualitative comments by incorporating data gathered from the quantitative mode.

To complete Level 2 training, first, watch the Video *Overview of Qualitative Mode*, read the specific features section below, and then follow the training lessons to complete a short qualitative observation and learn the mechanics of using the qualitative mode of SMT.

[Lesson 2.0 - Video Overview of Qualitative Mode](https://youtu.be/tprgqtfq_RA) https://youtu.be/tprgqtfq_RA

Lesson 2.1: A Quick Look at Specific Features of the Qualitative Comments Mode

Note the following main quadrants of the screen that show a completed observation.

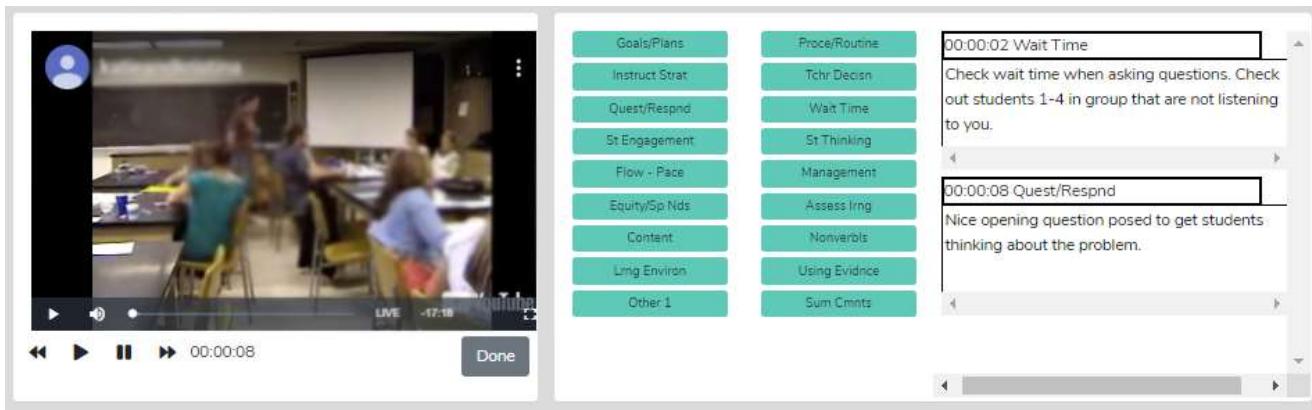
The screenshot shows the SeeMeTeach software interface. The top left features a video player window titled "SeeMeTeach SMT Practice Video Swinging Spheres". The top right quadrant contains two vertical comment boxes. The top box, timestamped at 00:01:42, is labeled "Management" and contains the text: "Seems to be using a strategy where he wants to find out what the students would predict might happen vs telling them how it works". The bottom box, timestamped at 00:02:09, is labeled "St Thinking" and contains the text: "Sort of preempts the challenging questions by telling them he is going to give them some hard thinking questions". The bottom right quadrant displays course and lesson information: Course Name (Physical Science), Period, Block, or Time of Day (1), Lesson Topic (Swinging Spheres), Subject Taught (Science), and Grade Level. The bottom left quadrant is a "Seating Chart Heat Map" with rows labeled 1 through 5 and columns labeled 1 through 12, showing student engagement levels across the classroom.

If the observation was video based versus a live observation, the top left window contains the play and pause buttons and a lesson clock synced to the video. Note again, when using video, any team member can observe, enter the qualitative analysis mode, and individually view, comment, and provide feedback.

Steps to Collecting Data in the Qualitative Comments Mode

The top, far-right window contains the running commentary boxes. Each comment entered is time-stamped and has a category label connected to that comment. For example, when viewing the video, if the observer notices something about the lesson, teacher, or students and wants to enter a comment pertaining to “questioning,” they first click on the quest/respond button. When this occurs, the timing clock and the video

pauses, the time is noted, and the sequence number of the comment is added along with the comment category heading, and the user can type the feedback into the comment window, as shown below. Note that the user can use the back or forward arrow to rewind or jump ahead 10 seconds when doing the observation or while in the qualitative analysis mode.



When finished typing the comment, the user clicks play and resumes the observation. If the user needs to go back to the starting point of a comment-worthy event, they can rewind using the 10 second back button (once or more) or jump forward in 10-second increments using the double-arrow forward video control. If the observer is doing a live observation, they obviously cannot press pause, so they would continually click on categories and enter comments on the fly.

When the observation has ended (but before the user clicks DONE), the user can enter some final thoughts using the summative comments category button (Sum Cmnts).

Suggestions for First-Time Users - When first using the *Qualitative Mode*, the novice user is unfamiliar with the various comment buttons. When users want to comment, they can click on the pause button to stop the video, allowing themselves time to determine which comment button pertains to their comment. The alternative is letting the video play until determining which comment button to click – in the meantime, teaching continues. So, for the novice who is only getting familiar with the comment buttons, using the pause feature is probably necessary until qualitative mode skills are developed.

Note: The software is set up so that each comment is linked to the video but is programmed to start the video 30 seconds ahead of when the comment was entered so when viewing playback of the video, the event noted is more likely to be seen, without having to use the rewind button.

Comment Buttons Defined or Explained – Generally, the buttons are defined as follows, and what is typed into the comment box is an observation, comment, or recommendation regarding such.

1. Standard Set – Labels for Comment Buttons

Lesson Goals or Plans – Goals or Plans: These comments pertain to the goals of the lesson, objectives, learning targets, or plans for the class. For example, the observer may make a comment about how the actions, events, or activities of the class relate to the goals of the class or standards of instruction.

Instructional Strategy - Instructional Strategy: These comments relate to an instructional strategy chosen by the teacher to use in class. For example, the 5 E model in science or modeling in math. These comments could also pertain to how much the teacher is lecturing vs. using small groups or cooperative learning.

Questions-Response – Questioning and Responding: Comments in this category highlight how a teacher asks questions, how they respond to student answers, patterns of interaction, or something pertaining to teacher-student interaction. Classroom management interactions, however, would fall under the *Management* category button.

Student Engagement – Student Engagement: Comments in this category highlight how much or how little student engagement is present, methods of increasing student engagement, whether student engagement is concentrated among a few students, or if most students are engaged and in what manner.

Lesson Flow or Pace – Flow or Pace of the Lesson: Comments in this category highlight how the lesson is flowing and at what pace - too fast, too slow, just right, and indicators of such.

Equity or Special Needs – Equity or Special Needs: Comments in this category highlights students with special needs and their level of engagement, adaptations for the lesson, or suggested modifications. These comments can also be used to track the inclusion of all students and highlight equity regarding gender, race, etc.

Lesson Content – The Content and Subject Matter: Comments in this category highlight certain aspects of the content or subject matter of the lesson.

Learning Environment – The Learning Environment: Comments in this category highlight aspect of the learning environment – is it conducive to learning? Do students feel safe to contribute and interact with each other and to take risks and leave their comfort zone? Has the teacher developed good relationships with students?

Other 1 – Comments in this category pertain to miscellaneous comments that don't necessarily fall under any other categories.

Procedure or Routines – Procedure or Routines: Comments in this category highlight how the teacher uses procedures or has developed routines that help the class function better.

Teacher Decisions – Teacher Decisions: Comments in this category highlight specific teacher decisions witnessed in the observation. Perhaps a child was misbehaving, and the teacher chose not to address the misbehavior. The comment made by the observer would pertain to ignoring the misbehavior.

Use of Wait Time – Using Wait-time: Comments in this category highlight the teacher's use of wait-time 1 or wait-time 2 as it relates to teacher-student interactions, questioning, and responding.

Student Thinking – Student Thinking: Comments in this category highlight student thinking, ideas that are uncovered, misconceptions identified, or teacher actions or strategies that help to uncover student thinking.

Behavior Management – Classroom Management: Comments in this category highlight student misbehaviors and if/how the teacher reacts or is proactive as related to such.

Assess Student Learnng – Assess Learning: Comments in this category highlight assessing student learning.

Teacher Nonverbals – Teacher Non-verbals: Comments in this category highlight the non-verbal behavior of the teacher that affects the classroom learning environment, student engagement, or ability to be more effective. Examples might include the teacher might be jiggling coins in his pocket, stroking a beard, taking glasses off and putting the stem in their mouth, positioning themselves in a stand-offish manner with arms folded and across their chest in a non-inviting manner, scrunching their eyes when listening to a student response and consequently students and the observer interpret that look as negative feedback to the student.

Using St Evidence – Using Student Evidence: An essential component of the EdTPA assessment requires the applicant to describe how they are teaching using evidence. More so, evidence from students shows they have met the objective of the lesson in the form of a student-generated artifact.

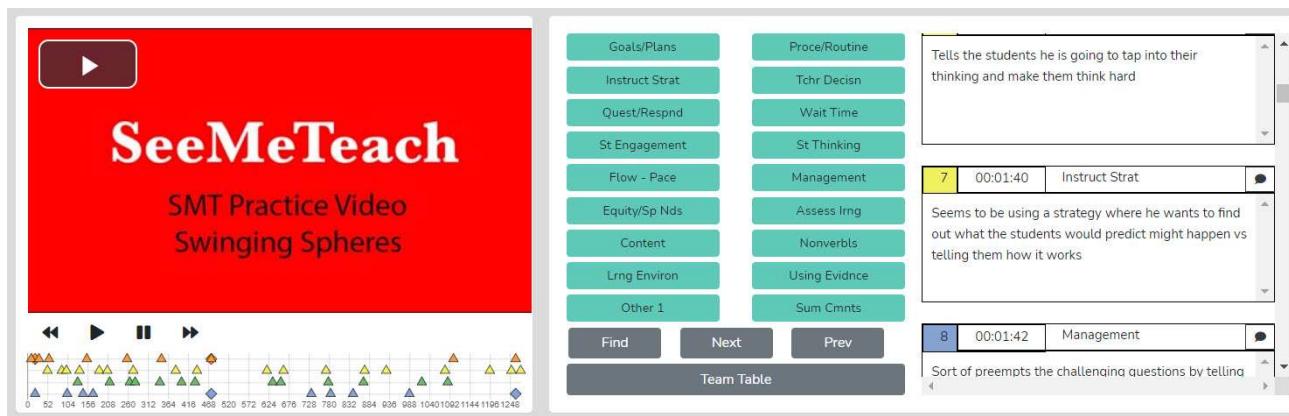
Summative Cmnts – Summative Comments: When the observation reaches the endpoint, and when all things are considered, the user can add some significant concluding and summative comments about the lesson.

Other Sets of Comments Buttons

When choosing “qualitative” as the type of observation, there are many choices for types of buttons that include a Standard set as well as sets for *Danielson*, *Marzano*, *Special Education*, *High Leverage Practices*, *edTPA*, *NBCT*, *Signing and Interpreting*, *World Languages and ESL/Bilingual*. However, more sets of comment buttons are being developed to accommodate the needs of observers who use specific schema when observing or who wish to utilize another mainstream set of observational categories when making and linking comments. For example, another set of buttons is being created for those who are focusing on teachers of students with special needs.

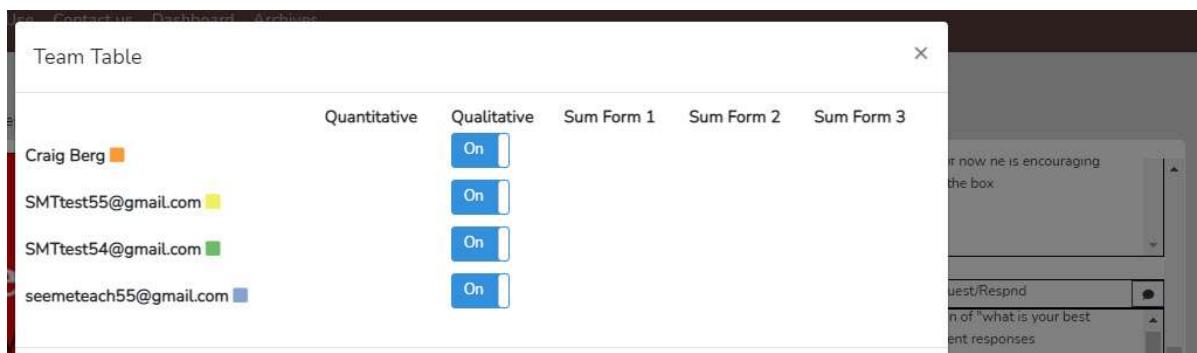
Lesson 2.2 - Quick Look at Specific Features of the Qualitative Analysis and Feedback Mode

Once the user finishes adding their qualitative commentary and clicks DONE, the screen changes slightly. The following features are added to the screen, turning the qualitative data collection mode into qualitative analysis mode.

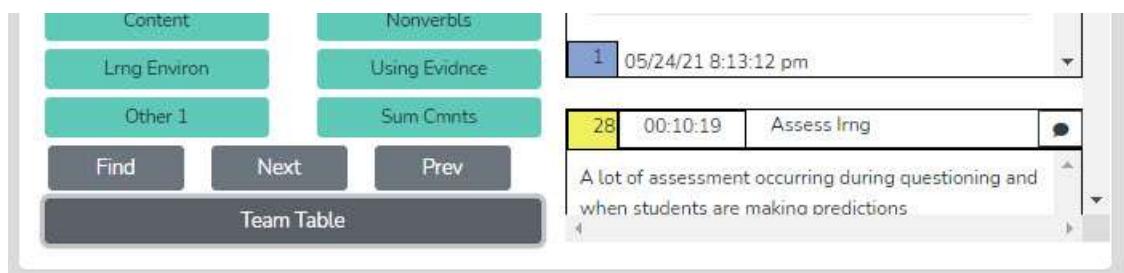


Things The User Can Do

1. **View and Scroll Through the Observer's Comments** – Any comments made during the observation by any of the four possible observers are displayed in the comments window, color-coded by the observer, time-stamped, and with the comment category heading shown.
2. **Identify Who Made the Comments - Team Table - Unification and Synergy Using Data and Feedback** – The *Team Table* contains links for team member's observation results. Suppose multiple team members have completed the observation using a video of the lesson. In that case, the user can bring up the *Team Table*, identify the observer's comments by color, and toggle any of the other team members' color-coded comments on or off in the comments window by clicking the qualitative data button on or off. The figure below shows the qualitative comments option for all four observers toggled to the on position. Therefore, all user's comments would be displayed.

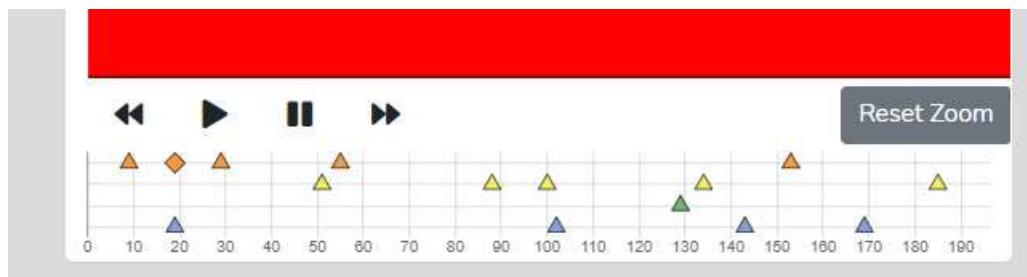


3. **Search and Find** - The user can search and find comments headed by a specific comment category by first clicking on the FIND button, then clicking on a specific comment button. The first comment with that heading and the section of the linked video that correlates with that specific comment will begin playing. Clicking NEXT will locate the next comment on that category type. Clicking PREVIOUS will locate a prior comment, and the video segment linked with that specific comment again will play.



4. **View the Timeline and Which Observer Made Comments, When and Where** – The timeline below the video window shows the lesson from beginning to end with comments noted by a color-coded triangle. With the mouse wheel, the user can zoom in or out when the symbols become crowded or reset the

zoom to normal by clicking the Reset button. Clicking on the triangle or diamond shape in the timeline underneath the video window highlights that comment in the comments window.



5. **Links to the Video** – All comments are time-stamped and linked to the video. Besides using the *Find* function, the user can also watch the linked segment of the video by clicking on the time box in the specific comment window.
6. **Team Members Can React to Comments** – Note that each comment has a thought bubble symbol on the right side of the header of the comment box. Any member of the team can click on this bubble symbol and type something regarding that comment, and a team member could continue or add to the comment by clicking on the symbol and typing to ask for clarification, ask a question, answer a question, respond to the person who left the original comment. In other words, this feature allows for a mini exchange between members of the observation team. Any reaction is color-coded, so users know which team members are leaving comments or reactions to comments. The blue user left a comment to the orange user above. Note that the original comment is noted on the timeline by a triangle. If a user reacts to a comment, the symbol changes to a diamond shape. A quick scan of the timeline alerts any user as to reactions existing in the set of comments and who left the reaction.

27 00:07:55 Quest/Respnrd
Uses the less risky notion of "what is your best guess" to get more student responses

1 05/24/21 8:13:12 pm



Exit to the Dashboard – After analyzing the qualitative data collected during the observation, the user can exit back to the *Dashboard* by clicking on the *Dashboard* heading at the top of the page.

Lesson 2.3 - Completing a Qualitative

Comments Observation and Analysis – In this lesson, the user will become familiar with using the features of the qualitative comments data collection and analysis mode they read about in Lesson 2.2. There is very little training required to use the SMT qualitative comments mode.

However, before observation, the user might want to review the comment category buttons and refresh their memory of what button they would click per type of action they wish to comment.

Steps to Complete a Qualitative Comments Observation and Viewing the Data Analysis Page

1. If continuing directly from Level 1 training, the SeeMeTeach ® web page should be open to the screen where the user can choose qualitative or quantitative. Choose *Qualitative*, then select *Standard*, and proceed to practice the qualitative comments collection mode. When the qualitative commentary of the short video is completed, click **DONE**, and the screen will change to the qualitative analysis mode.
2. In Training Level 1, if you chose *Save and Return to Dashboard*, go to your *Dashboard*, identify the lesson you set up, labeled *Lesson 2.2 Practice*, enter the *Expanded Dashboard* by clicking on the plus symbol, click on the *Start* icon under the qualitative column, choose *Standard*, then begin the qualitative observation. The screen should show the video window at the top left with the qualitative buttons and the comments window at the top right. Press play and begin the observation and addition of comments.
3. If you need to set up a completely new observation, click on *New Observation*, and on the screen with a heading that says “Create a New Observation,” choose video-based observation, then copy and paste this URL <https://youtu.be/pjv0FSyR5sw> for SMT Practice Video Truck Hill L.
4. When you have finished adding comments to the observation in Lesson 2.2 and click **DONE**, the screen will change slightly to the qualitative analysis mode, and you will notice some extra buttons added to the screen. If you took a break following completion of the qualitative observation in Lesson 2.2, then go to the Dashboard, locate Lesson 2.2, click on the plus symbol, click on the green checkmark to put the qualitative analysis mode on the screen, and proceed.
5. Now that the qualitative analysis mode is on the screen **USE** the features described in Lesson 2.3 to familiarize yourself with their functions.

Need More Practice?

If the user desires more practice, set up a *New Observation*, and copy and paste any URL from the master list of Practice Videos located at the beginning of the training section into the video window in *New Observation*.

It is recommended to use the Swinging Spheres Video. <https://youtu.be/XIPKXIkeHMA>

Enhancing Observations Using Quantitative Comments

Qualitative comments and recommendations are valuable to the teacher, and they often stem from observers who may have years of experience observing classrooms and providing feedback. Yet, when able, professionals should give feedback, make decisions, and draw conclusions based on evidence and data. As

such, the quantitative mode of SMT (next in the training) provides a plethora of data that can support or refute observations or fine-tune comments and recommendations.

When the team user and/or member completes the quantitative mode first, the data can bolster the qualitative commentary. For example, wait-time data from the quantitative mode can support the more general and subjective comments made while in the qualitative comment phase. For example, instead of just typing “Consider increasing your wait-time,” the observer could refer to the quantitative wait-time data and supplement the comment with “Your wait-time one average is 1.6 seconds, and your wait-time two average is .89 seconds. Try to increase your wait time to an average of more than 3.5 seconds. Let’s think of something you can do when interacting with students that will help you remember to use more wait time. Perhaps put your hand behind your back and count to five on your fingers.” This is only one example of many where quantitative data can bolster qualitative commentary.

Next in the Training Sequence

The training levels will prepare the user to collect rich and robust quantitative data that are indicators of effective instruction and serve as mile markers for growth and improvement of teaching.

Training 3: Introduction to the Training For Quantitative Data Collection Mode Levels 3 – 11

SMT collects and then analyzes quantitative 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 the lesson. The raw data is time-coded and linked to the events as they take place in the video. Note that data collection can also occur live in the classroom without video. Data collection can be limited and focused on a single factor or be more complex and encompass many elements. The goal of the data collection determines which options the observer will choose to use and, therefore, what data to collect to fulfill the intent of the observation. The user can also choose to observe and code a specific desired length of time. As with the qualitative mode, the amount of class time-coded varies depending on the length of the targeted lesson segment, such as small group work versus a lab activity versus a whole class discussion.

The Richness of the Observation and Quantitative Data Collection

There are a surprising amount of teacher and student actions within an entire or just a section of a lesson. An observer collecting data on both the teacher and students might easily enter 200 plus data points in 20 minutes of observation. Why is that? When a teacher is cognitively immersed in the flow state of teaching, they think, weigh options and choices, make decisions, and take action based on many factors. They need to consider and attend to many variables such as student mood, students' actions, and behaviors or misbehaviors, interactions with students, time constraints, and the next steps of the lesson. Given everything happening in this chaotic environment, it is remarkable that teachers control this constant state of flux. The teacher is absorbing all this information, recalibrating and adjusting the lesson, or altering their interactions with students based on what they see and hear. In short, there is a plethora of teacher decisions, and some or many turn into discernable and distinct teacher actions. These teacher actions are designed to and do affect student action. This combination of teacher and student action data tells the tale of the lesson and helps the observer and teacher come to conclusions about the teacher's teaching skills. The teacher's actions and student actions are indicators of pedagogical effectiveness and offer clues as to what to change or improve to have even more positive impact on the learner.

When using SeeMeTeach ®, a quantitative observation consists of clicking buttons that correspond to teacher and student actions in the classroom. While no system is perfect for all, most of the discrete and observable teacher and student actions can be linked to one of the buttons. Therefore, collecting this data provides a footprint and a fingerprint of the story that unfolded during the lesson observation. The story is clarified further when the data analysis uncovers trends, patterns, tendencies of teacher action and showcases student involvement and engagement in the lesson. The data collected are limited to visible, discernible, discrete, and recognizable teacher and student actions - what the observer can view and note in their comments. A pre-lesson discussion with the teacher or a look at a well-crafted lesson plan will help clarify both intents of delivery and expected outcomes. Yet, the observer doesn't know the teacher's reasoning behind the actions until the post-lesson discussion when the observer and teacher can debrief and put context to the decision-making during the lesson.

Using SMT, observations can be simple and focus on only one factor, or they can be complex and collect data on many factors. The fun begins when the observation is completed, and the instant analysis is viewable for cogitation. This is the moment when some aspects of teacher actions and student actions become more apparent, displayed in seating chart heat maps, graphs, tables, and charts with counts and patterns. This extensive analysis helps the teacher and observer reach data and evidence-based conclusions about the

teaching being observed and the extent of student engagement during the lesson. It is difficult to discount the data and even more difficult to ignore the video segments linked to the data that turn an opinion into a concrete example of a teaching strength versus an aspect of teaching in need of improvement.

Now let's look at the quantitative data collection screen below and read about the various chunks of data collection buttons and their functions.

Read This First – The power of the quantitative mode is immense, something you will realize as you progress in skill development and begin to collect data beyond the first few levels of training. As you view the graphic below of the quantitative data collection screen, remember, it is your first look - very little will make sense and it might seem visually overwhelming. That will quickly change.

Here is what should be remembered about training. All of these codes and features are options that you will learn in chunks, beginning with rudimentary and easier levels of use. However, after seeing the tremendous power of SMT and the benefits of the data and analysis, you will be inspired to work towards using more of the options. This inspiration will be your fuel to continue to quickly move through the levels of training and learn the “buttons” and “controls” ultimately acquiring the skills of a “black belt SMT user” regarding data collection and analysis.

Remember – you are going to learn SMT in chunks – you can do this!

Training for the Quantitative Data Collection Mode

Introduction to Training for the Quantitative Data Collection Mode - While preparing for and using the qualitative mode of SeeMeTeach ® (SMT) takes little start-up time, the quantitative mode takes a bit more time to become proficient, but completely worth the training time when considering the valuable data and information one can glean from such an observation. Training helps the user to progress through various levels, beginning at a simple level followed by progressing to capturing more of the teacher and student actions resulting in more extensive data and analysis, thereby providing rich opportunities for feedback and reflection.

Progression of Training for the Quantitative Data Collection – Training for the quantitative mode is set up to develop skills at various progressive levels. The user will rapidly progress through levels 3 – 5, which is basic information, types of codes, rules for operation, L codes (lesson type), M codes (misbehaviors), and S codes (student action). Then the training moves into recognizing and coding T codes (teacher actions) in level 6. Level 7 focuses on developing more speed and accuracy and data analysis when using T, S, and M codes and using U codes (optional user-defined codes). Completing Level 7 allows the user to claim SMT Black Belt status. In Level 8 – Black Belt 8, the user learns how to observe and code G Codes, small group interactions. Level 9 – Black Belt 9, training focuses on capturing data using T, S, and M codes with seating chart numbers while also capturing wait-time during an observation. Wait-time data is good to have on hand when analyzing ways to improve teacher-student interactions and student engagement. Level 9 is a level that every teacher can reach with a bit of effort. Using these features will maximize the full capabilities of SMT and produce a vibrant and robust amount of data, therefore allowing for optimal and extensive data analysis and feedback to

the teacher being observed. Level 10 proficiency is demonstrated by using all the data collection features with increased speed of coding that matches even the fastest-paced classroom. Level 10 - SMT Trainer is a level only reached via a practical exam given by SMT. Upon passing, the user is officially endorsed as SMT's certified stamp of approval for collecting data that has the high validity and reliability necessary for consulting or program evaluation or training others to use SMT.

Overview and Important Features of the Quantitative Data Collection Mode

In this lesson, the user will learn:

- The layout of the data collection screen and specific data collection buttons
- That all the data is linked to video segments
- The general operation of data collection and two rules for data collection
- What raw and analyzed data are available post-observation
- The features and examples of the quantitative analysis options
- Questions about teaching that the data help to answer

Steps to Take – First, watch the video overview. Note that the video points out the key areas of the screen and describes features and functions. After watching the video, read through the sections below for a thorough overview of SMT functions.

Lesson 3.0 Video Overview of Quantitative Data Collection Screen

<https://youtu.be/r1MMczuREfs>

Lesson 3.1: Quantitative Data Collection Screen Features

The graphic to the right shows where the quantitative codes reside on the data-collection screen.

The image displays the Quantitative Data Collection Screen interface. On the left, a grid of numbered buttons (S1-S16, T1-T13, L1-L16) with corresponding labels. In the center, a table with columns for Index, Code, Description, Event Length, and Wait Time. On the right, a video frame showing students in a classroom setting, and at the bottom, a digital timer and a numeric keypad.

While observations might use only one type of data button, the specific data collected can include the following:

L Codes – There are 16 choices for *Lesson Type*, which describe what is generally occurring during a lesson, such as lecturing, lab activity, small group discussion, etc. The lesson type changes typically only a few times during the lesson. Still, this feature is essential as it places other data collected, such as student engagement and misbehaviors, in the context of the lesson-type activity.

T Codes – These 14 codes represent teacher actions while instructing. They help paint a vivid picture of how the teacher interacts with their students and help uncover tendencies and patterns that make a difference in student engagement, learning, or behavior. Before attempting to code using T codes, we highly recommend completing the *Training – Level 6 Learn About T Codes*. This will help the user develop skills to sharpen their ability to recognize noteworthy teacher actions, therefore increasing their ability to collect more accurate data during the observation.

S Codes – These nine codes represent student actions when students interact with other students or with the teacher. The S codes paint a vivid picture of class dynamics, interactions, and aid in examining student engagement in the classroom. S1-S5 are for individual student responses, while S6-S9 is used when the whole group responds (dry erase, digitally, think-pair-share, or choral responses).

M Codes – These four codes collect data pertaining to student misbehavior and subsequent teacher reactions.

U Codes – These two codes are optional and user-labeled for collecting data concerning actions or events not covered by the existing T, S, and M codes.

Wait-time Bar – This button is used to determine average wait times, the range of wait times, and the specific type of wait-time(s) for T or S codes. This is a significant feature as wait-time is a factor known to impact student learning and engagement significantly.

Toggle On/Of To Simplify Data Collection – Located above the data collection buttons are small boxes serving as clickable toggles that the SMT user can use to show or hide any of the S, T, U, M, and Wait-Time buttons. A novice or experienced user, if only collecting a subset of possible data, may want to shade out and disable buttons they won't need for that teacher observation as doing so reduces what the user is viewing.

Other Features of the Coding Window Include:

Emergency– Note that this shows up **only when doing a live observation** and is used when an activity occurs that the user does not want to code and needs to pause coding. For example, maybe there is a fire drill, and the user can use this button to pause coding without leaving the data collection screen.

Unrecorded Event – Note that this shows up **only when using video**. If a section of the video does not want to code, they can click *Unrecorded Event*, and the video will keep playing, but the coding clock will pause until the user clicks an L key to restart the coding clock. The video will remain synced with the data, but the paused coding time will not skew the data.

Note: the previous two features are the same, but the labels change depending on whether the user is doing a live observation vs. using a recorded video.

Lesson Clock – Begins at zero at the start of the lesson and counts in minutes and seconds.

Timing of Events - All events coded are linked to the lesson clock, noting when in the lesson they occur and (for most) the duration of the event.

Video Window – If using a video instead of a live observation, the video is displayed here.

Scrolling Running Record Window – The window at the top is the running record of data being collected. It displays the events as coded in the window. Each time the user clicks a code, it is recorded and noted in the running record window. This window mainly functions as a feedback window letting the user know the code was indeed entered.

Student Seating Chart – If set up, this shows where the students are seated in the classroom, represented by a clickable number, and can be tagged to specific S codes or M codes. Also, small groups can be identified and noted on the seating chart. If not set up, the seating chart shows an 8 x 10 grid with numbers but without specific students' seats designated. The user can still use this generic chart and click on a seat number prior to clicking on an S code to generally show where the action is occurring. Keep in mind that no student demographics are tagged to that seat number since it is a generic seating chart. Note that all student action data can be linked to video segments and the *Seating Chart Heat Map* for post-observation data analysis – as such, there is a big payoff when using the specific seating chart numbers with the data.

Group Data Collection – The *Group* button is to the left of the seating chart. If the user clicks this button before clicking on any seat containing that specific group number, the running record will record the data prefaced by that group number. For example, clicking on G2 prior to clicking on S1 records the event as G2:S1.

Student Demographics - Also present but not visible on this data-collection screen are the underlying demographics regarding gender, minority, ELL, or special education status that can be displayed and examined during the post-data collection analysis phase (coming soon).

Like its namesake, the DONE Button is clicked when the user wants to end or be done with the observation. A second chance warning pops up in case the user wants to continue. It is placed off to the far right so that the user won't accidentally click it - it should remain untouched until the user has completed collecting data. Upon clicking *DONE*, the screen changes to the quantitative data analysis screen.

Remember - All these codes and features are options, that the user will learn in chunks, one step at a time. The user only needs to learn a few things to begin data collection. Note that the user can toggle on or off any set of T, S, M or U codes as well as the wait-time bar to reduce the complexity of the data collection screen.

Lesson 3.2: Quantitative Analysis and Feedback Options

SMT helps the user collect and then analyze data related to teacher and student actions during a lesson, and 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 analysis of data 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 that represent 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 the lesson start to finish. The user can scroll through the events and can 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).

The screenshot displays the SeeMeTeach software interface. At the top, a video player shows a teacher at a desk. Below the video is a timestamp '18:23'. To the right of the video is a table titled 'Index', 'Code', 'Description', 'Lesson Clock', 'Event Length', and 'Wait Time'. The table contains five rows of data:

Index	Code	Description	Lesson Clock	Event Length	Wait Time
1	L01	Administrative	00:01:59	00:00:08	
2	L03	Demonstration	00:02:12	00:00:14	
3	T04a	Teachers asks question requiring speculation	00:02:15	00:00:02	00:00:06
4	T02	Teacher is giving directions	00:02:26	00:00:04	
5	T02	Teacher is giving directions	00:02:30	00:00:03	

Below the table are two buttons: 'Team Table' and 'Download Data'. The main area of the interface is divided into three columns under the heading 'Data Buttons'. The left column lists various lesson components: Lesson Demographics, Pre-Lesson Questions, Code Summary, Lesson Summary, Management Summary, Student Engagement, Teacher Actions, Interaction Patterns, Wait-Time Summary, Small Groups, Post Lesson Questions, and Summative Comments. The middle and right columns contain a grid of buttons, each representing a specific event code. The buttons are color-coded: blue for S codes (S1-S10), green for T codes (T0-T7), and red for L codes (L1-L10). Some buttons have descriptive text next to them, such as 'S1: S asks T ?' and 'T0: monitor'.

Pre-Lesson Questions – Questions posed to the teacher that will provide context to and intent of the lesson.

- What are the main learning goals/objectives for the lesson?
- Describe the major activities or parts of the lesson to be observed.
- How will you know if the learning goals/objectives have been met? For example, what evidence will you have?
- Provide the context for the lesson. How is this lesson connected to the prior lesson? How is this lesson connected to the subsequent lessons? Where is this lesson placed in the current instructional unit?
- Describe the ability levels of the students in this class.
- What are you going to do to maximize the engagement of all ability levels of students?
- How will you differentiate the lesson for all types of learners?

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 timecoded 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.

The screenshot displays the Data Collection software interface. At the top left is a video feed of a classroom. Below the video is a heatmap titled "Student Heatmap" showing student activity levels across a grid of desks. To the right of the heatmap is a sidebar with "Data Buttons" and a list of report categories: Teacher Demographics, Lesson Demographics, Pre-Lesson Questions, **Code Summary**, Lesson Summary, Management Summary, Interaction Patterns, Student Engagement, Small Groups, Wait-Time Summary, Post Lesson Questions, and Summative Comments. The "Code Summary" button is highlighted. To the right of the sidebar is a "Team Table" data table and a bar chart. The "Team Table" shows the following data:

Index	Code	Description	Lesson Clock	Event Length	Wait Time
1	T02	Teacher is giving directions	00:00:08	00:00:10	
2	T03b	Teachers asks a question in short answer format	00:00:40	00:00:32	
3	S05	Student answers teachers question	00:00:49	00:00:09	
4	T08	Teacher repeats student answer	00:00:57	00:00:12	
5	T02	Teacher is giving directions	00:00:59	00:00:02	

Below the Team Table is a bar chart comparing the frequency of different codes. The x-axis lists the codes: T02, T03b, S05, T08, S08, T00, T01, S06, T03a, T10, T07, T05, T06, S09, S01. The y-axis represents the count of events, ranging from 0 to 25. The bars show the following approximate values: T02 (~7), T03b (~22), S05 (~20), T08 (~14), S08 (~23), T00 (~1), T01 (~1), S06 (~8), T03a (~4), T10 (~2), T07 (~8), T05 (~1), T06 (~1), S09 (~1), S01 (~1).

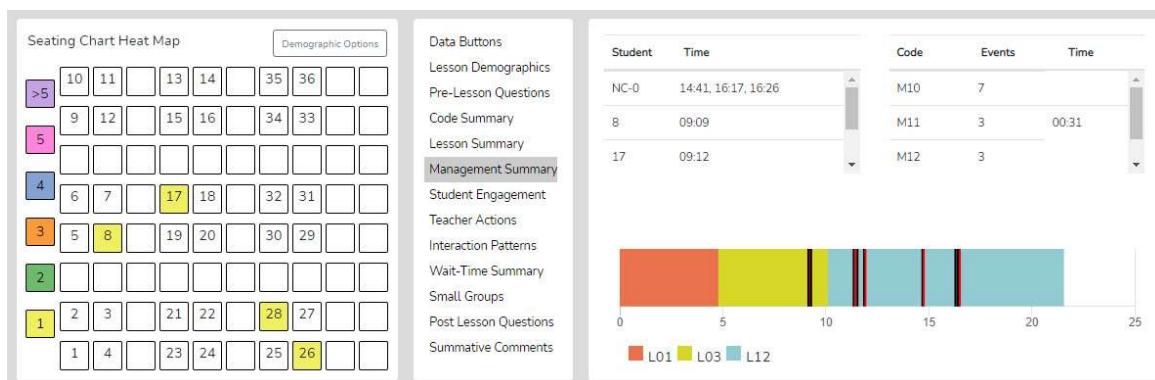
Below the bar chart is another data table titled "Code Summary" showing the following data:

Code	Description	Events	Events%	Duration	Duration%
T02	Teacher is giving directions	7	5.83%	00:01:35	8.40%
T03b	Teachers asks a question in short answer format	21	17.50%	00:03:16	17.33%

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 segment of the lesson. 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 the 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.

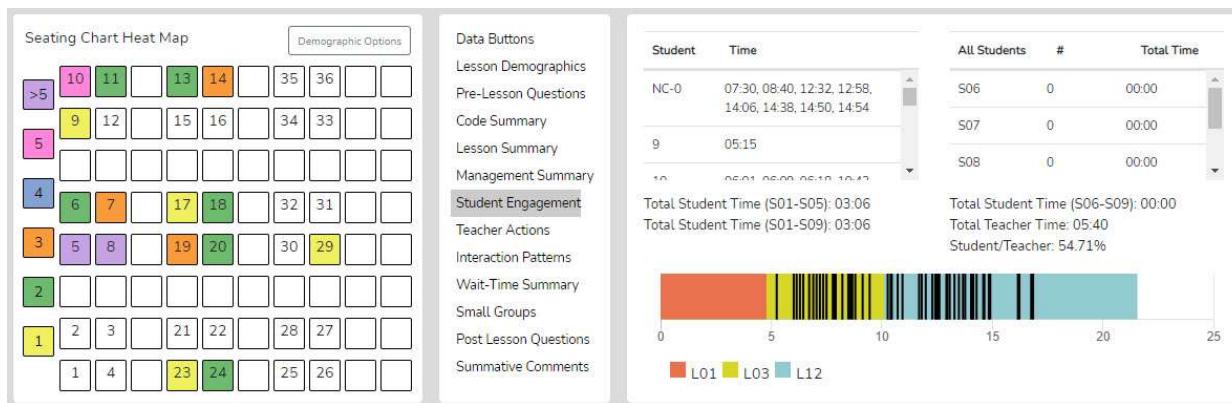


Demographic Highlighting in the Seating Chart Heat Map - In addition, if data is collected for specific students by using the student seat number before entering the M code, then the data can be displayed and toggled on or off by clicking on the Gender, ELL, SPED, or Minority buttons. If the observer 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).

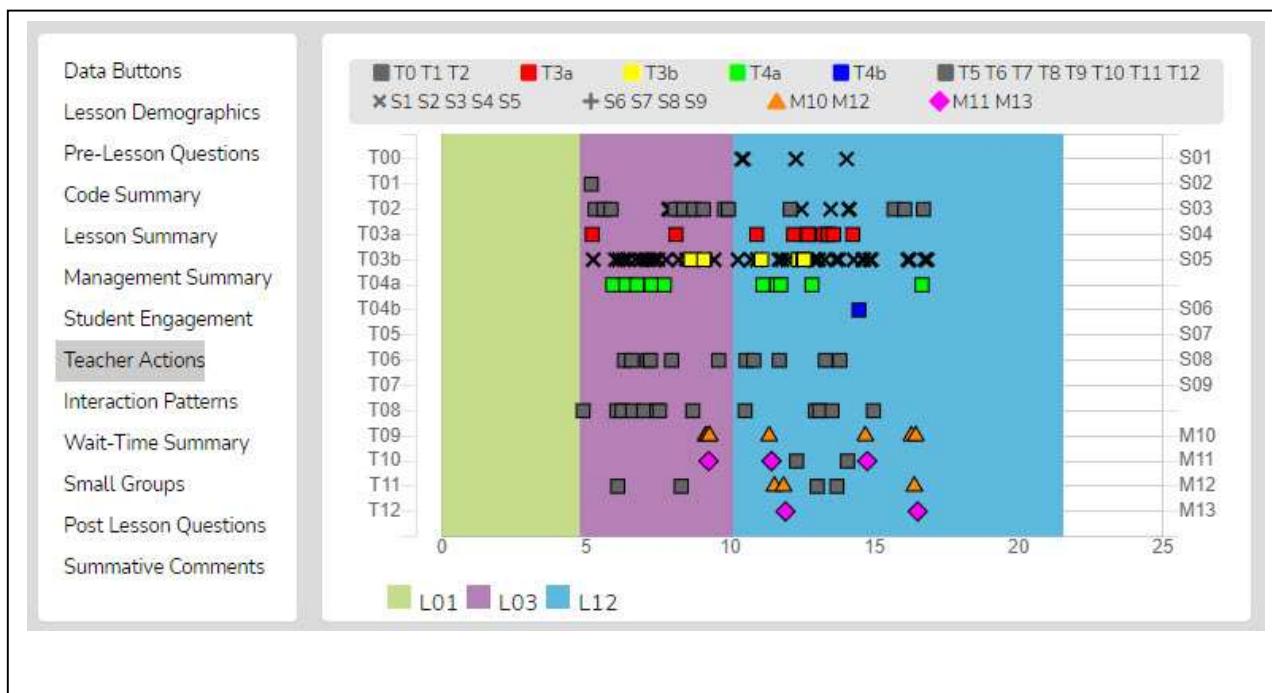
S-S: 14 T-S-T: 29 T-T: 33		Find Patterns Of:
Pattern	Sum	
S05-T08- S05	4	S01 - Student asks teacher a question S02 - Student asks student question S03 - Student comments to the teacher S04 - Student comments to another student S05 - Student answers teachers question S06 - Student answers
T04a-S05- T08	4	T00 - Teacher is monitoring students working T01 - Teacher presents information T02 - Teacher is giving directions T03a - Teachers asks a question in yes/no format T03b - Teachers asks a question in short answer format
T06-T04a- S05	3	
S05-T06- T04a	3	
T02-S05- ...	2	

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 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.

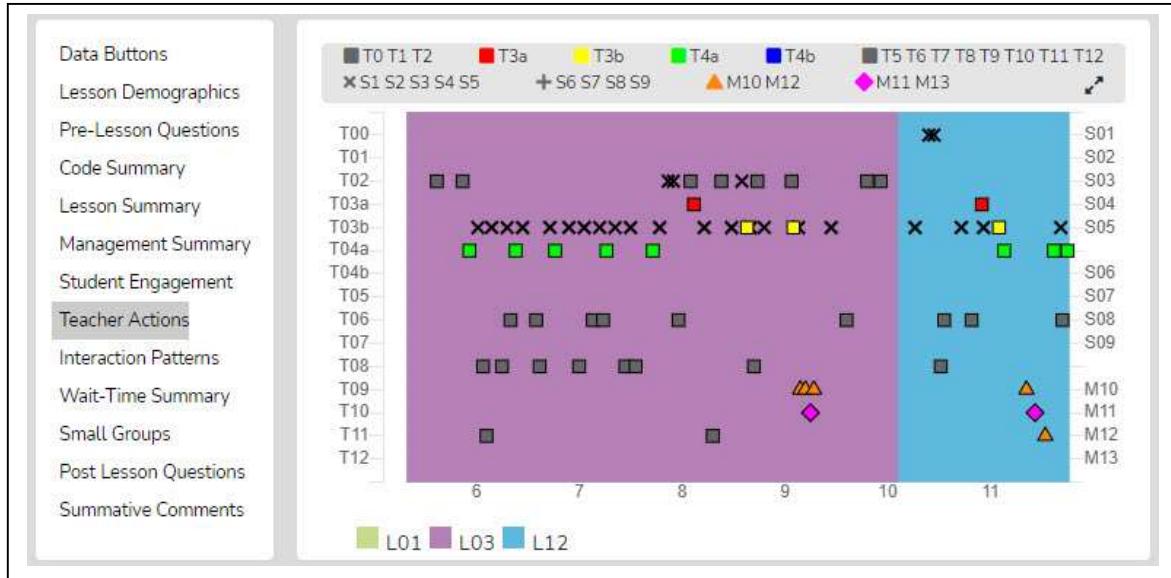


Demographic Highlighting in the Seating Chart Heat Map - In addition, if data is collected for specific students by using the student seat number before entering the S code, then the data can be displayed and toggled on or off by clicking on the Gender, ELL, SPED, or Minority buttons. If the observer 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 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 occurred 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 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.

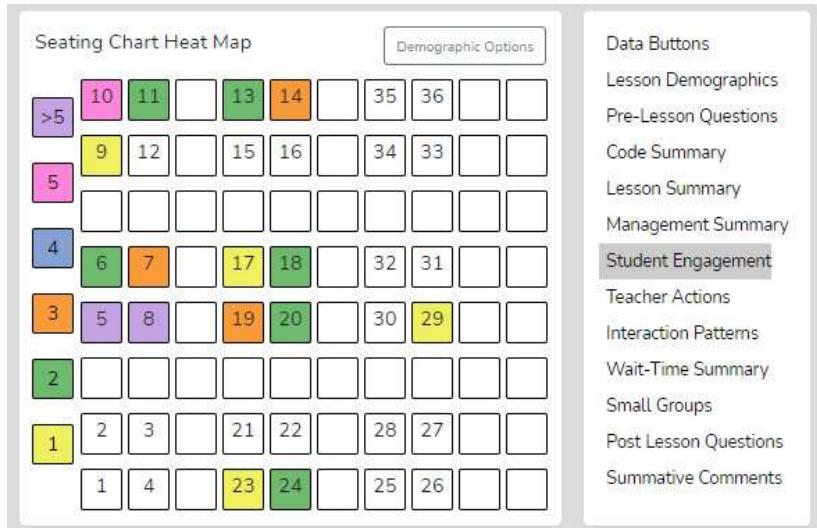


Finally, as with other data points in SMT, the user can click on any data point (symbol) and the linked video will play.

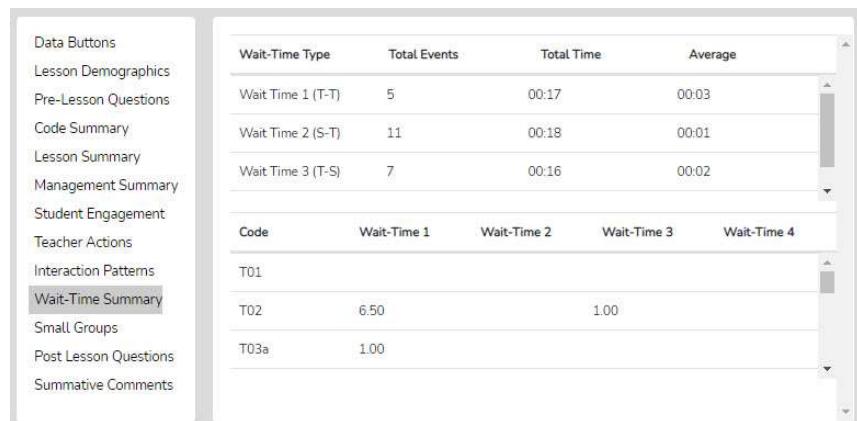
Small Groups – When completing a quantitative observation and student engagement or misbehavior data is collected and tagged by an individual or group number, the observer can then use the *Student Engagement*, *Management Summary*, *Seating Chart Heat Map*, and *Small Group* analysis displays to examine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

	Misbehavior	Engagement					
		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 and with color-coding to show the number of contributions each member made.



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, by events, by total time, and averages for each wait-time. In addition, the lower half of the summary provides wait-time averages according to specific teacher or student actions. For example, the user can determine if more wait time is allowed with higher-level questions that require deeper thinking than lower-level questions.



Post Lesson Questions – Questions for the teacher to respond to following the lesson and observation.

- Tell me about today's lesson. Probe: What went well? What needed to be improved? If you taught this lesson over again, what would you change? Why?
- What do you think students learned from today's lesson?
- What evidence do you have of this learning?
- What evidence did you observe that learners of all ability levels were engaged in this lesson?
- Based on what happened in today's class, are you planning on making any changes to the next lesson? If so, what are those changes?
- What is the next step for this class in this unit?

Summative Comments – A place for the observer or team member to add some final thoughts, conclusions, or recommendations regarding the observation.

Team Unification and Synergy Using Data and Feedback – If another member of the team has completed the quantitative coding of the video, before leaving the data analysis screen (or from the *Dashboard*), the user can open the *Team Table* click, toggle on, and view the data gathered and the analysis by that team member. Or the user can jump to any team member's completed quantitative or qualitative observation by clicking on the green checkmark in the expanded *Dashboard*.

Lesson 3.2 Two Types of Codes for Collecting Data - There are two types of codes used in the SMT observation tool. One type of code is an *event-only code*. The second type of code is the *event/timing code*.

Event-only Codes - An “event-only” code **only** can be clicked at any time, and it is added to the running record, but no timing is associated with it other than simply noting when it occurred on the lesson clock. There are only four event-codes in SMT, which are M10, M12, U1, and T13. M10 – single student misbehavior – is an event-only code used to note that student misbehavior occurred and when it happened during the lesson, but not for how long the student was misbehaving, nor does it disrupt the timing of the current code in play. For example, let’s say the teacher is lecturing, and a student is somewhat disruptive – the observer can note this misbehavior by tapping the M10 code (or the student’s number and then M10 code), and the misbehavior is noted without disrupting the timing of the lecturing event. The rest of the event-only codes are explained later.

The screenshot shows the SMT observation tool interface. At the top, there is a table with columns: Index, Code, Description, Event Length, and Wait Time. The table contains two rows:

Index	Code	Description	Event Length	Wait Time
1	L01	Administrative	00:00:00	
2	T02	Teacher is giving directions	00:00:02	

Below the table is a vertical column of event codes categorized by letter:

- S: S1: S asks T?; S2: S asks S?; S3: S commt 2 T; S4: S commt 2 S; S5: S answers?; S6: S dry erase resp; S7: S digital resp; S8: Thk Pair Shr; S9: Choral npns; M10: S misbeha
- W: W.A.I.T
- A: T.I.M.E
- I: T.I.M.I.N.G
- M: U.N.R.E.C.O.R.D.E.D
- E: F.E.V.T

On the right side, there is a video feed showing a classroom scene with students and a teacher. Below the video is a timeline showing the time 00:00:17 and control buttons (play, pause, done). To the right of the timeline is a grid of numbered boxes representing the lesson clock. The grid is organized into rows labeled G, R, O, U, P and columns labeled 1 through 16. Some boxes contain additional text like "L1: Admin wrk", "L2: Lect/notes", etc.

Event and Timing Codes - An event **and** timing code notes the event, when it occurred in the lesson, and how long it lasted.

- Except for the four event-only codes listed above, all the rest of the codes used for SMT data collection are event and timing codes and time how long that event lasted. For example, how long did it take for the teacher to ask the yes/no questions? How long was the student's response? How much time was spent giving directions for the activity?

Lesson 3.3 Basic Rules and Options – SMT is designed to maximize the quality and quantity of classroom observation data that an observer can collect **IF** the user follows some basic rules of use.

1. **Rule #1 – Always click an L code button first.** The L codes are used to designate what type of lesson is in play. Clicking the L code initiates the timing and the clock, and only then can the user enter T, S, M, or U codes. That specific L code remains until the lesson type changes, and then a new L Code is entered.

Tap the L codes at the very beginning of the lesson and the front end of any change in lesson type. Usually, the first L code clicked in any observation is L1 - short administrative tasks that teachers often do at the start of class, like taking attendance, collecting papers, or introducing the plan for the day. Each time the lesson type changes, the observer notes this change by clicking a different L Code as soon as they notice the change in lesson type. For example, suppose the teacher starts with administrative tasks. In that case, the observer clicks L1, then follows with a lecture and students taking notes; the observer would tap *L2: Lecture/notes* and would not tap another L code until the teacher changes to a different lesson type, such as moving into small group discussion (L5).

* **When using video**, click PLAY and then immediately click an L code to start.

* **When NOT using video** (while doing a direct observation in the classroom). Click an L code to begin the timing clock and start collecting data – an L code always starts the timing clock.

2. **Rule #2 - Always tap the T and S code buttons (and two of the M code buttons) at the end of the event.**

Since T0 to T12, S1-S9, M11, M13, and U2 are event and timing buttons, the observer needs to **tap the button at the end of the event**. For example, when the teacher is asking a question, the observer taps the T code just as soon as they finish asking a question. Or the S code is tapped when the student finishes responding, or the M11 code is tapped when the teacher finishes addressing the misbehaving student. Tapping at the end of the event gives the observer time to determine what type of question is being asked or what category/code the statement or response falls under. Tapping the button at the end of the event also initiates timing for what is going to be the start of timing for the next code entered.

Let's start with a close look at L codes and how they are used in data collection and analysis.

3.4 Learn About L Codes: Type of Lesson in Play

L Code Training Steps –

1. Read through the L Code definitions below and become familiar with the various L codes.
 - As with any of the codes or buttons, these codes do not have to be memorized as the labels are on the buttons. However, the user should be somewhat familiar with the choices available.
2. Read about how the lesson summary information is shown as a graph to examine student engagement and student misbehavior data.

L Code Definitions

L1: Admin wrk – Administrator work: The teacher is doing some administrative work like taking attendance, collecting or handing back papers, providing an overview of the class, etc.

L2: Lecture/notes – Lecture or notes: The teacher is dispensing notes and information using the smartboard, overhead projector, or simply talking or drawing on the board

L3: Demonstration – Demonstration: The teacher is doing a whole-class demonstration

L4: Class discussion – Class discussion: The whole class is having a discussion with the teacher and students contributing; at times, the teacher may ask pairs of students to interact briefly with each other – but the main focus discussion occurs as a whole group

L5: Small group disc – Small group discussion: The class has been broken up into small groups, perhaps by tables or a cluster of desks, and the primary discussion takes place within the small groups.

L6: - S presentations – Student presentations: Individual or small groups of students are presenting their work or findings to the rest of the class.

L7: Writing activity – Students are writing: Students are immersed in writing narratives or another writing activity, etc.

L8: Reading activity – Students are reading: Students have been asked to read a section of the chapter or an article, etc.

L9: Worksheets/prob – Worksheets or practice problems: Students are working on a worksheet or completing practice problems.

L10: Digital Searching – Digitally searching for information: Students are working in the computer lab or using phones, laptops, or iPads to search for information.

L11: Using objects – Working with objects: Students are using math or science manipulatives or 2d or 3d objects such as maps, globes, etc.

L12: Lab activity – Lab activity: Students are completing a lab activity, collecting, and organizing data.

L13: Playing game – Playing a game: Students are playing an academic game.

L14: Review session – Reviewing materials: Students are reviewing for a quiz or test, either individually, in small groups, or as a whole class.

L15: Watch Video – Video: Students are watching a video in class.

L16: Assessment – Assessment: Students are taking a quiz, test, or another type of assessment

Lesson Summary on the Analysis Page – After completing a lesson observation and entering the analysis screen, displayed in the *Lesson Summary* data window is a timeline showing the order and length of time each type of lesson used during the observation in the form of a horizontal graph. The sequence shown on the *Lesson Summary* (right) is L1-Admin Work, L4 – Whole Class Discussion, and finally, L06 – Student Presentation. This information can be helpful when wondering how much time the teacher used per lesson type. But, more importantly, the lesson type graph is used as a time-context reference when examining *Student Engagement Summary* and *Student Misbehavior Summary* data to show where those events were occurring in the lesson.

How Can SMT Users Utilize the L Code (Lesson Type) Data?

After collecting and viewing L code data, teachers can use this information and data to help move towards highly effective teaching. The most important aspect of the lesson type data is that *Student Engagement* and *Management Summary* data are overlaid within the context of the lesson type so the SMT user can see where behavior problems or student engagement occurred during the lesson or lesson type.



In addition, the user can consider the following:

- Teachers can view how much time was spent on each segment of the lesson and think about if more or less time was used on lesson segments than intended and how the use of time affected the outcomes of the lesson.

- After the bell rings and the class period begins, teachers can analyze how much time it took to start teaching and then decide what to do differently to begin teaching right at the start of the class period.
- Teachers can examine how much time was used for each lesson segment and the time needed for transitions between each part of the lesson. This allows the teacher to ponder what changes should be made to reduce the time needed for transitioning from one part of the lesson to another.
- If the lesson ended early, teachers could view much time at the end of the lesson, was not used for instruction, and think about some productive things to insert into the lesson to utilize the remaining class time.
- Teachers can consider the whole class period and what might have been done to use the time even a bit more productively.

Level 4 – Learn About M Codes: Student Misbehaviors and Teacher Reactions

Management Summary –We all know how student misbehaviors can tank a lesson or drive teachers out of the classroom. Therefore, it is critical to examine student and teacher behaviors regarding classroom management. The data indicates how the start of class, lesson type, or transitions might affect student behavior. This data, plus a visual representation of specific student misbehavior events and a summary of teacher response to such (or lack thereof), sheds some light on the complex issues surrounding misbehaviors. We might wonder if a certain table of students, a specific classroom area, or one specific student is generating most of the misbehaviors in class. We might wonder how many misbehaviors are occurring without the teacher intervening or how much time is used when the teacher pauses instruction to deal with misbehavior issues.

In this lesson, the user will learn:

- How to collect data on student misbehaviors and teacher's reactions to misbehaviors
- How to link data to the student seating chart
- How to view the raw and analyzed misbehavior data
- How to use the demographic toggles to parse data by student characteristics
- How to view the misbehavior events and teacher reactions that are linked to video
- Questions to ponder regarding data collected and analyzed

[Lesson 4.0: Video Overview of M Codes](https://youtu.be/JR5nZ61kAgw)

<https://youtu.be/JR5nZ61kAgw>

Steps - During this training, the user will set up a new observation and add a seating chart. The user will then practice entering M codes using seating chart numbers while viewing a pre-recorded lesson teaching five avatars. Finally, the user will view and explore the analysis of the M Code data collected in the observation under *Management Summary*.

Lesson 4.1: M Codes – To accomplish the goal of improving classroom management, four M codes are used to provide a picture of student misbehaviors in the classroom and how a teacher reacts.

M10 – This code highlights single student misbehavior. It is an event-only code used to note that a student's misbehavior occurred and mark when it occurred during the lesson. However, it is NOT noted for how long the student was misbehaving, nor does it disrupt the timing of the current code in play. For example, let's say the teacher is lecturing, and a student is somewhat disruptive – the observer can note this misbehavior by tapping the M10 code, and the misbehavior is noted without disrupting the timing of the lecturing event. If it is a prolonged behavior, the user can tap M10 periodically to note that the behavior continues. The M10 button can be used by itself or with a specific student number. For example, the user can tap a student number before M10, such as 8-M10. If a student's number is used before tapping an M code, the analysis page will show rich data about who, when, and where misbehavior occurs in the classroom. Note that it is up to the observer to determine if something is misbehavior or not, but generally, misbehavior might be defined as any action that disrupts the learning of the individual or other students in the class.

M11 – This code is used when a teacher addresses a single student's misbehavior. It is an event, and timing code specifically used when the teacher recognizes the student's misbehavior and somehow decides to stop

teaching and address it. The data will show at what time in the lesson the teacher addressed the misbehavior and how long that event lasted. For example, if the teacher stops teaching to talk with an individual student who is misbehaving, stops teaching to send non-verbal signals/verbal cues, or reprimands the student, the teacher's efforts to lecture have ended. At this time, the observer would click the code that signals the end of the current teacher action, such as lecturing (T1), and after the teacher finishes addressing a single student, the observer clicks M11.

M12 – This code is used when a group of two or more students is misbehaving. It is an event-only code used when a small or large group of students are misbehaving and notes that a group-sized management event occurred. Like the M10 code, it does NOT, however, note for how long the students were misbehaving, nor does it disrupt the timing of the current code in play. This misbehavior incident might be the whole class of students, a small group of students at a table, or a variety of students in the class who are off-task and misbehaving in one form or another. Note that for small group size events, a G code could be inserted in front of the M12 to indicate which small group or groups are off task.

M13 – This code is used when the teacher stops teaching to speak to the group of students misbehaving. This event and timing code is used when the teacher addresses a small group of students or the whole class. This code tracks the time the teacher stops teaching, addresses the misbehavior(s), and attempts to get the small or entire group of students back on track.

Lesson 4.2 Practice Coding and Analyzing M Codes

Setting Up an Observation - Set up an observation to practice using M Codes with seating chart numbers – Create a *New Observation* with a title of *4.3 Coding M Codes* for the lesson topic. [For the video URL, copy and paste the SMT Training Practice Truck Hill M](#) <https://youtu.be/YSD7mNBbZ1Q> into the URL window.

Optional Second Practice Observation - If you wish to do another practice lesson using M codes, then use *SMT Training Practice Video Float Sink M* for the video. <https://youtu.be/uLJ3Jvn0jHw>

Using Seating Chart Numbers with M Codes – Set up a *Seating Chart* for this lesson observation that includes five avatar students seated as shown below; 3 students are seated in the back row, and 2 are seated in the front row, and the teacher facing them. Add in a T to indicate the teacher's position, as noted below.

3 Maria 4 CJ 5 Kevin

1 Ed 2 Sean

T (teacher)

- Review of Setting Up A Student Seating Chart
 - Individual Students - To identify where students are seated and give them a number, first, click on the icon STUDENT, so it turns blue, then click on a square representing the location of where a student is seated. A number will also appear labeled in the square. Repeat this action until all student seat numbers are identified – each number will appear sequentially in squares that are

clicked. To place the teacher on the seating chart, repeat the process outlined above using the TEACHER icon.

When you finish, choose *Save and Start* and choose *Quantitative*.

Note that the user can toggle on or off any set of T, S, M or U codes as well as the wait-time bar to reduce the complexity of the data collection screen. For practicing M codes, the user might want to have only the M codes displayed.

Start the video and click on an L code (in this case, the lesson will be an interactive demonstration) to begin timing. If comfort level allows, use the student seating chart numbers and M codes to note misbehavior and the teacher's response. Simply click on the seating chart number of the misbehaving students before clicking on M10. Or, to keep it simple, just click on M10 or M12 each time a student or the group misbehaves and then click on M11 after the teacher addresses the individual student or M13 after the teacher addresses group misbehavior. However, using student numbers before M10 provides more specific misbehavior data and a seating chart heat map visual of who and how many times regarding misbehavior.

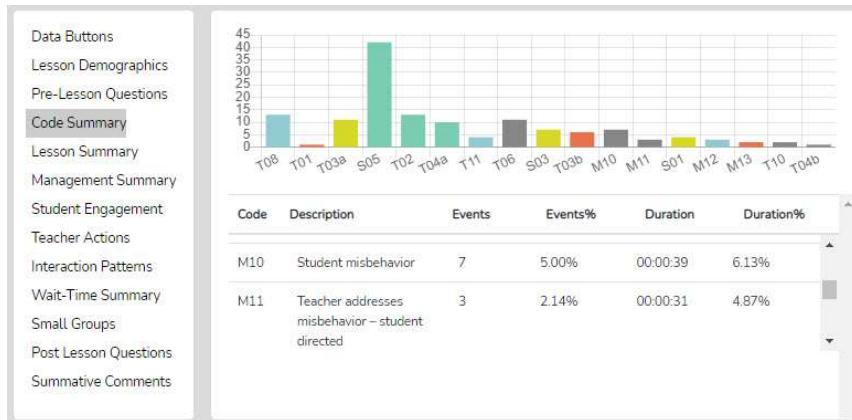
When finished with the observation, click **DONE**, and the screen will display the *Quantitative Analysis* screen.

Note: Data analysis for all observations can also be accessed from the *Dashboard* by selecting a previously created observation, clicking on the plus symbol (+), and clicking on the green checkmark in the quantitative or qualitative column. This will bring the user to the correlated *Quantitative* or *Qualitative Analysis* screen for that observation.

Lesson 4.3 - Quantitative Data Analysis Mode Features

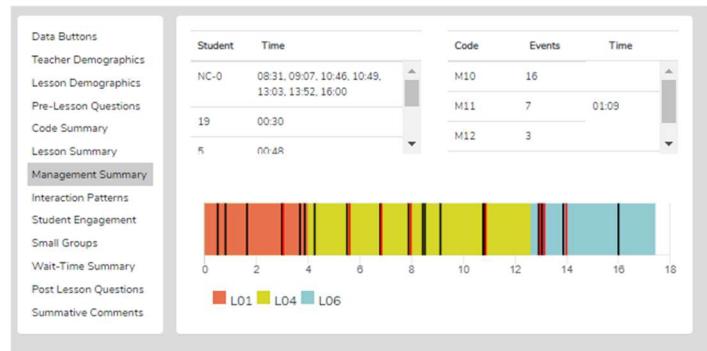
Like the *Qualitative Data Analysis* mode, the *Quantitative Data Analysis* mode has various features included, which help break down data and highlight various trends in teacher and student actions in the classroom.

Code Summary – As shown below, this feature shows how many times each code was used during data collection, including relative and specific use of the M codes. The user will only have M code data to examine for this lesson. Underneath the graph is a data table that displays data for 1) each of the specific codes by frequency of an event, 2) frequency of an event compared to the overall total number of events, 3) amount of time for each type of event, and 4) time accrued for that event compared to the total time of all the events. At the bottom of the data table for your practice observation, you can see that the M code data has been tallied and turned into percentages of events and time.



issue or group behavior issue, and how much time was used for the intervention.

As shown in the figure at the right, when first clicking on *Management Summary*, any student misbehavior (M10) or group misbehavior (M12) event has a corresponding black vertical bar displayed on the lesson timeline graph noting when it occurred in the lesson segment. In addition, any teacher reactions to student misbehavior (M11) or group misbehavior (M13) are also shown on the lesson timeline graph but as a vertical red bar.



With the mouse wheel, the user can zoom in or out when the bars become crowded or reset the zoom to normal by clicking the Reset button, the double arrows (top right, above the timeline).

If the M10 events were coded with a student seating number, all those M10 events are displayed in the top left of the *Management Summary* window, separated by specific student numbers. If the user coded an M10 code without using student seating chart numbers, the quadrant in the *Management Summary* window would include NC-0 meaning Non-seating Chart coded M events. The times following are when in the lesson that event or events occurred. For example, NC-0 1:18 means an M code event, without a seating chart number attached to it, happened at 1:18 into the lesson. 19 – 00:30 means that student 19 misbehaved at 00:30 in the lesson.

The far-right side of the window contains the total counts of the M10-M13 codes. These show the number of events of each code and how much time was accrued (in minutes and seconds) due to the teacher responding to misbehaviors in the classroom. The data and time compiled indicate how much teaching time was lost due to the teacher addressing misbehavior issues.

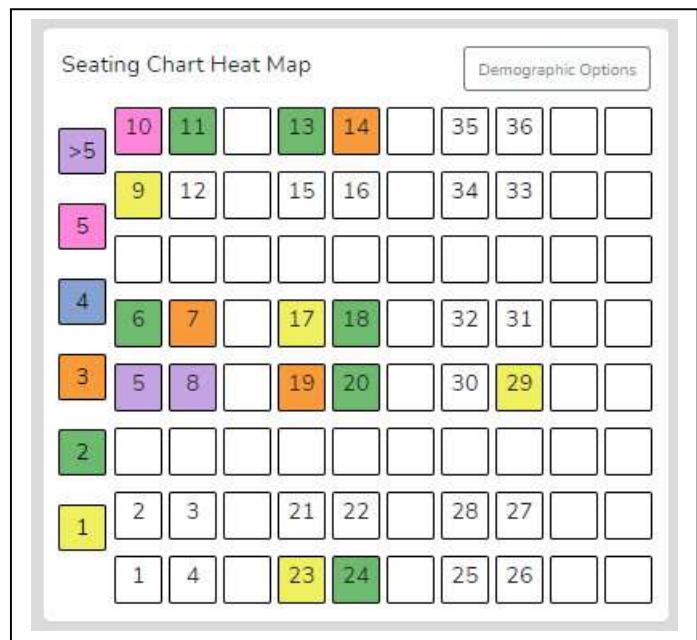
Links to Video – Student misbehaviors and the correlating teacher response data points collected during the observation are linked to the clock on the video and are presented as vertical bars on the lesson timeline graph. As such, the user can click on any vertical bar to view the correlating video segment. In addition, the

user can isolate the misbehaviors of a particular student. Suppose the user wishes to view all episodes of student 15's misbehaviors. In that case, they can click on student 15 in the *Management Summary* window or on the *Seating Chart Heat Map*, which will cause all the vertical bars to disappear from the lesson timeline graph except for the data points linked to student 15. The red bars, teacher interventions, are also clickable and are linked to the video segments.

Seating Chart Heat Map - If a specific student seating chart was defined (or when using the generic seating chart), the management data is visually represented in the seating chart heat map by colors representing misbehavior events ranging from 0 - >5. This visual representation provides the user with a map of the who, where in the classroom, and how many misbehaviors for each student took place during the lesson. This is useful information when attempting to analyze and reduce misbehaviors that impede the teacher's ability to teach and students' efforts to learn.

Also, note that when group data (Gs in seating chart) are collected, Student Misbehaviors (M10) can be coded to a specific group (or still coded to a specific student within that group). An analysis of the small group behaviors and misbehaviors can be found under *Group Summary* – more on this in *Training Level 8 – Small Groups*.

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 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.



Running Record - At the top right of the quantitative analysis screen is the *Running Record* window, which shows all the events documented throughout the observation in sequence from the lesson start to finish. The user can scroll through the events and can click on **any** event (including behavior management issues) to see the related video. Note that soon the user will be able to export the data to a .csv file for use with powerful statistical packages.

Data Buttons and Locating M Code Events in the Running Record - The *Data Buttons* and *Find* feature work as follows - If all qualitative results are toggled off in the *Team Table*, the top-right of the screen shows the *Running Record* of the quantitative data collection episode. If the user clicks on the *Data Buttons*, the set of buttons/codes from the quantitative data-gathering phase pops up in the bottom right quadrant. Suppose the user wishes to locate linked video examples of a specific code. In that case, they can click on a specific M button, which FINDS the first of that specific event type in the *Running Record* window and prompts the linked video to play. At the bottom of the *Running Record* window, a note indicates how many events of that type were located.

Note: The video begins playing at the very start of the time for that data event. If the user needs to see the video before that starting point, they can use the left arrow to rewind the video – each click is 10 seconds of rewind. Clicking NEXT takes the user to the next example of that specific event type. Clicking PREVIOUS takes the user to the previous example of that code, and the video begins playing. Clicking on a different data button will bring up the first example of that data type.

Index	Code	Description	Lesson Clock	Event Length	Wait Time
1	L01	Administrative	00:01:59	00:00:08	
2	L03	Demonstration	00:02:12	00:00:14	
3	T04a	Teachers asks question requiring speculation	00:02:15	00:00:02	00:00:06
4	T02	Teacher is giving directions	00:02:26	00:00:04	
5	T02	Teacher is giving directions	00:02:30	00:00:03	

Team Table Download Data

Data Buttons

- Lesson Demographics
- Pre-Lesson Questions
- Code Summary
- Lesson Summary
- Management Summary
- Student Engagement
- Teacher Actions
- Interaction Patterns
- Wait-Time Summary
- Small Groups
- Post Lesson Questions
- Summative Comments

S1: S asks T ?	T0: monitor	L1: Admin wrk
S2: S asks S ?	T1: Present Info	L2: Lect/notes
S3: S commt 2 T	T2: Directions	L3: Demo
S4: S commt 2 S	T3a: yes/no ?	L4: Class disc
S5: S answrs ?	T3b: sht ans ?	L5: Sm grp disc
S6: S dry erase rsp.	T4a: sht spec ?	L6: S Prsntatns
S7: S digital rsp	T4b: lng ans-jstfy	L7: S Writing
S8: Thk Pair Shr.	T5: reject ans	L8: S Reading
S9: Choral rspsns	T6: Ackn ans	L9: Wksht/prob
M10: S misbehav	T7: cnfrm ans	L10: Digital Srch
	T8: uncnfrm ans	L11: Wksht/lnk

Things to Ponder - How Can SMT Users Utilize the Specific M Code – Student Misbehavior Data?

Here are some guiding statements to ponder when analyzing the misbehavior data from the *Code Summary*, *Management Summary* data, and related *Seating Chart Heat Map* which will help the user focus on specific data and analysis features.

- How many classroom management events were noted by the observer? (*Code Summary*)
- How many of those classroom management events were not addressed by the teacher? Note that if when the number of M10 events is added to the number of M12 events, that number is greater than the number of M11 and M13 events, the teacher is probably ignoring some of the student misbehaviors, either intentionally or due to the frustration of not having an impact when they do intervene.

- How much time did the teacher use to intervene in management events? (M11 and M13)
- Check the map to see where the problems are occurring and see if they are proximal or distant to where the teacher is located. (Seating Chart Heat Map)
- Are behavioral issues proximal or distant to where the teacher is located? (Seating Chart Heat Map)
- Think about how the teacher moved around the classroom or stayed in one place. (Noted from watching the video)
- Where in the lesson, or during which lesson type, did the management issues occur? (Vertical bars on the lesson segment timeline)
- How many management issues occurred at the start of class, end of class, or during transitions from one lesson segment to another? (Vertical bars on the lesson segment timeline)
- How much time was needed to get all the students settled and begin the lesson when transitioning from one lesson segment to another? (video)
- How did the students behave or misbehave today as a whole, compared to other days in general? (teacher's impressions)
- Regarding specific students who might tend to misbehave, how was their behavior today? (teacher's impressions)
- Look at the data for specific students who might misbehave and consider their behavior in this specific lesson vs. other lessons. (Counts of misbehaviors)
- Was there anything about this lesson that might have contributed to more or fewer management issues? (Teacher speculation)
- When using the Seating Chart Heat Map and the Demographics toggles, what can you determine about behavior issues regarding select groups of students?

Level 5 – Learn About S Codes: Student Actions and Using the Seating Chart

Introduction - For level 5 training, the user will learn how to use the nine S codes. Specifically, the first five relate to individual student responses (S1-S5) (which can be used in association with the seating chart), and the final four relate to whole group responses (S6-S9). Capturing this data provides a rich picture of student engagement in the classroom.

S codes are used when the observer wants to capture student actions using S codes, perhaps in a situation where the goal is to profile how students respond, either individually, within a small group, or the whole class. This allows the user to capture data on which students are engaged in answering questions, communication between the teacher and student, or communication between students regarding the quantity and type of discourse. To accomplish this goal, the observer can click on S1-S5 codes (at the end of the event) or first click on a student number before clicking on the S1-S5 codes (at the end of the event) 1-S5, 4-S3, 15-S5. The S6-S9 codes are not used with a student number because those codes refer to the whole class of students generating responses, such as when the teacher asks the students to write on the dry erase boards. Utilizing all the S codes allows the user to capture all the individual and whole-class responses and helps determine the full extent of student engagement and interactions during the lesson.

The user will learn:

- The various individual and whole group student action codes (S codes)
- How to collect S codes with or without seating chart numbers
- How to look at both raw and analyzed student engagement data
- How to view the color-coded levels of engagement in the Seating Chart Heat Map
- How to use the Demographic toggles to parse data using student characteristics
- How to view the video linked to each of the data points
- Questions to ponder about teaching when examining the S code data and analysis

Steps - During this training, the user will learn the student action codes and then practice entering S codes using seating chart numbers while viewing a pre-recorded lesson of someone teaching five avatar students. Finally, the user will view and explore the analysis of the S Code data collected in the observation under *Student Engagement Summary*.

Lesson 5.0 Video Overview of Using S Codes – Data Collection and Analysis

<https://youtu.be/FOAuOEPtRo>

Student Engagement Summary – This specific data can tell the user:

- If a few students are responding versus many students contributing responses
- If responses are forthcoming from students who sometimes are left out, such as students with special needs.
- How much of the lesson involves students who are actively contributing - communicating by responding, asking questions, or commenting to the teacher or other students vs. passive and hunkered down in their seats.
- The whole picture regarding student engagement in the classroom, both individually and as a whole class, compared to time used and centered on the teacher's actions.

Training Progression – First, the user will collect data and then learn how to look at the analysis pages to develop a rich sense of student engagement in the classroom, which sets the foundation for improving student engagement.

Lesson 5.1 S Codes – The S Codes are:

- | | |
|-------------------------------|--|
| S1: Asks T question | - A Student asks the teacher a question. |
| S2: Asks S question | - A Student asks another student a question. |
| S3: Comment to T | - A Student makes a comment to the teacher. |
| S4: Comment to S | - A Student makes a comment to another student. |
| S5: Answers question | - A Student answers a question (from the teacher or another student). |
| S6: Dry erase response | - All or most students answer a question using a dry-erase response board. |
| S7: Digital response | - All or most students answer a question using a digital device such as a phone, computer, or using group response software such as Pear Deck or Kahoot. |
| S8: Think pair share | - All or most students are asked a question, think, pair up and share responses. |
| S9: Choral response | - All or most students respond as a group to a question. |

Lesson 5.2 Practice Data Capture Using S Codes and Student Numbers - For this training, the user will learn to use S codes 1 - 9 in association with seating chart numbers by coding a video of someone teaching five avatar students while using the seating chart.

Training Steps:

1. Create a *New Observation* and use the video URL - <https://youtu.be/XIPKXlikeHMA>. For lesson topic name, type Lesson 5.2 S Codes Seating Chart.
2. Set up a *Seating Chart* for the five avatar students on the video, as shown below, three seated in the back row and two seated in the front row. Add in a T to indicate the teacher's position, as noted below.

3 (Maria) 4 (CJ) 5 (Kevin)

1 (Ed) 2 (Sean)

T

3. Click *Save and Start*.

Note that the user can toggle on or off any set of T, S, M or U codes as well as the wait-time bar to reduce the complexity of the data collection screen. For practicing S codes, the user might want to have only the S codes displayed.

Note: This lesson takes approximately 30-45 minutes to complete and should not be started unless the user has adequate time to complete it. Therefore, after completing the *Seating Chart*, the user can either click

Save and Return to return to the *Dashboard* (if the user needs to complete training at another time) or if proceeding directly to Lesson 5.3, click *Save and Start*.

If you choose *Save and Return* to *Dashboard* and return later to continue with the training, begin at the *Dashboard*. Find the observation you created titled 5.2 S Codes and Seating Chart, click on the plus (+) symbol, and then click on the green START button under the quantitative column - your data collection window will open, with a video in the window.

4. Chose *Quantitative*, and before beginning, review the S code labels and remind yourself of what they represent.
5. Press “play” on the video control and press L1 to sync your data with the video.
 - a. Note: An L code should always be the first code chosen at the start of each observation.
6. Code the video using S codes. Identify individual student responses by clicking on a student seating chart number prior to using an S1-S5 code. For the S6-S9 codes, no student seating chart numbers are used.
 - a. Important reminder: when any student starts an action such as responding to a question, the user should first click on the student number on the seating chart. Then when the student has finished talking, the user immediately clicks on the appropriate S code button. These types of codes that are event-timing buttons are always clicked at the end of the event.
7. When you are finished with observing and coding the video, click **DONE**. You will be taken to the *Quantitative Data Analysis* screen, where you can continue with lesson 5.3 below. If you are continuing with Lesson 5.3, then later, you can exit SMT, then return to the data analysis of the lesson by using the *Dashboard*.

Lesson 5.3 S Code – Student Engagement Data Analysis Options

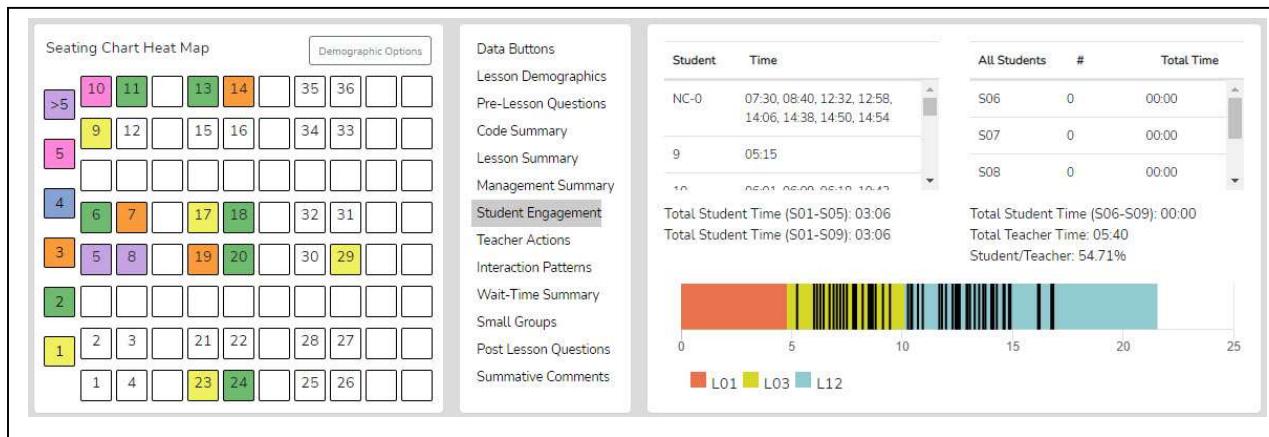
Introduction - In this lesson, the user will learn how to examine the details and meaningful information displayed on the quantitative analysis screens and how S code data is linked to the video.

Training Steps:

1. If you continued from lesson 5.2, you would already be at the quantitative analysis screen. If not, go to your *Dashboard*, select the lesson you created, click the plus symbol (+), click on the green arrow in the quantitative column, and this will bring you to the quantitative analysis screen.

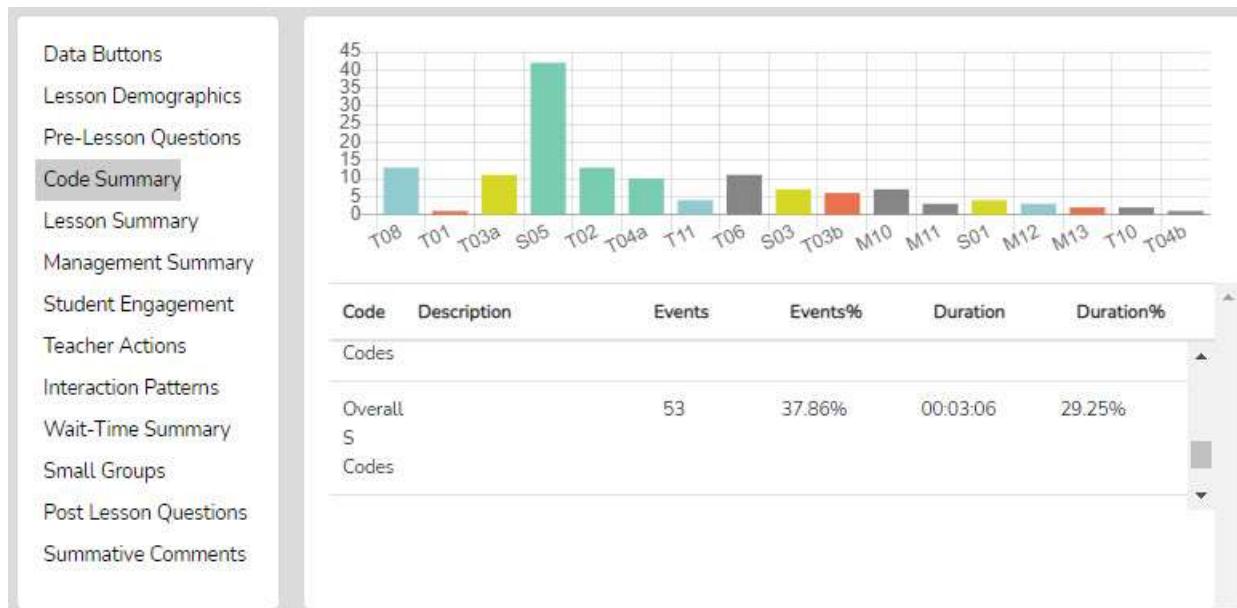
Student Engagement Summary Features

The Student Engagement summary displays events of individual student code events (S1-S5), whole-group engagement (S6-S9), and how much time was coded for student engagement versus teacher talk.

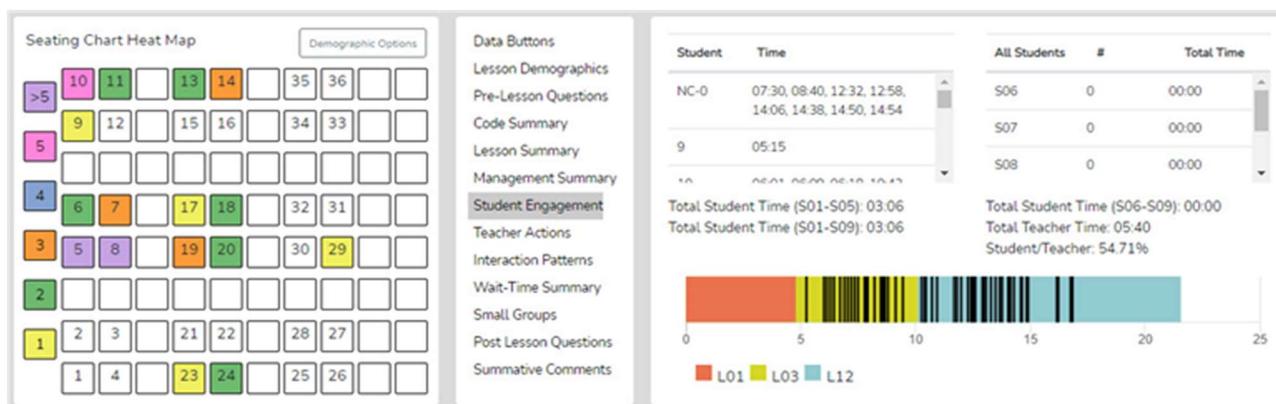


When first clicking on *Student Engagement*, like the M code data analysis page, the user will notice the lesson timeline graph containing black and red vertical bars as well as a couple of tables above the graph.

Code Summary –As stated before and shown below, this feature provides a graph of how many times each code was used during data collection, including relative and specific use of the S 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 overall total number of events, amount of time for each type of event, and time accrued for that event compared to the total time of all the events. At the bottom of the data table for your practice observation, you can see that the S code data has been tallied and turned into percentages of events and time.



Student Engagement Summary – The Student Engagement summary displays data regarding individual student code events (S1-S5) and whole-group engagement (S6-S9) and how much time was coded to student engagement versus teacher talk.



Tables Above the Graph - Like the *Management Summary*, if the S1-S5 events were coded with a student seating number, all those events are displayed in the top-left of the *Student Engagement* summary window, separated by specific students. The student seating chart number is displayed, followed by the times that specific students were coded as contributing an S code event. If the user coded an S code without using student seating chart numbers, the quadrant would include NC-0 (followed by clock times), meaning non-seating chart-coded S events. For example, NC-0 1:18 means an S code event, without a seating chart number attached to it, occurred at 1:18 into the lesson.

Whole class responses and engagement is represented by codes S6-S9. Suppose the teacher asks a question directed to the whole class of students or gives direction for them to act related to thinking or answering a question. In that case, the S6 – S9 codes are utilized to gather data on whole-class engagement regarding responding using dry erase boards, digital responses on Chromebooks, iPad, or another device, think-pair-share, or choral responses. The upper right window provides a breakdown of each of the S6-S9 codes by the number of events, the amount of time that is related to each S code, and the tally for all the S6-S9 codes.

Graph and Vertical Bars - Below the table is the lesson timeline graph, displaying the lesson segments with vertical bars. When clicking on Student Engagement, black bars are displayed for each student number-coded action (S1-S5) and red bars for the group responses (S6-S9). This allows the user to see where in the timeline of the lesson students contributed and showed actions of student engagement. With the mouse wheel, the user can zoom in or out when the bars become crowded or reset the zoom to normal by clicking the Reset button, the double arrows (top right, above the timeline).

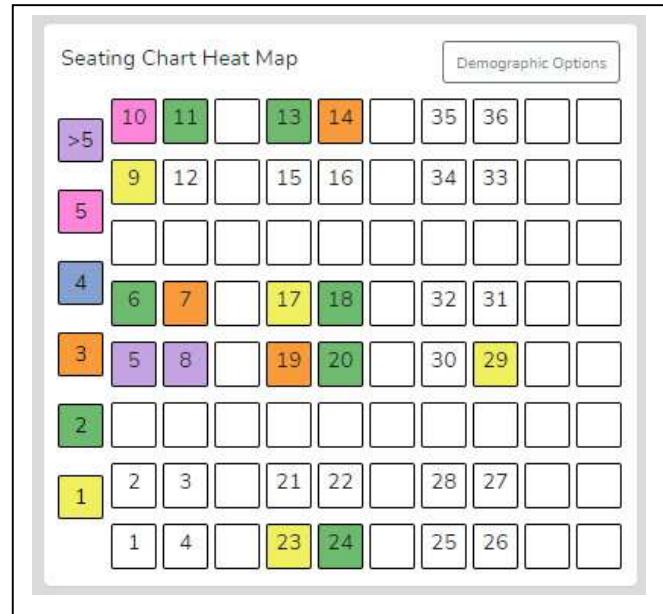
Suppose the user wishes to only see the events on the timeline for a specific student, then first click on a specific student number in the upper left table above the graph. In that case, all bars disappear except for the black bars (events) for that specific student. When clicking on any of the S6, S7, S8, or S9 labels in the upper right table, the red bars for that specific data appear on the graph. If the user wishes to transition from a specific data set to the entire data set, they can simply click on *Student Engagement*.

Links to Video – Student engagement data points collected during the observation are linked to the clock on the video and are presented as vertical bars on the lesson timeline graph. As such, the user can click on any vertical bar to view the correlating video segment. In addition, the user can isolate the engagement of a particular student. For example, suppose the user wishes to view all episodes of student 15's engagement. In that case, they can click on student 15 in the *Student Engagement* window or on the *Seating Chart Heat Map*, which will cause all the vertical bars to disappear from the lesson timeline graph except for the data points linked to student 15.

The Ratio of Student to Teacher Time - Immediately above the graph is the tally for total S1 - S5 time (individual student engagement events), the total time for S1-S9 codes (total student engagement time for the lesson), total teacher time (T1 through T12 – to be covered in a subsequent lesson), and the percentage of total student engagement time vs. total teacher time. Not coding T codes yet, the S code ratio should show 100%. When coding a lesson using both S and T codes, if the S to T ratio is greater than 50%, students contributed at least 50% of the time in the class. If the ratio showed equals 5%, it means that the students were contributing very little. Note that this ratio is a rough indicator of student engagement in the classroom. A class resulting in a 10/90 ratio looks very different compared to a class with a 90/10 ratio.

Student Seating Chart Heat Map - The *Student Engagement* data is also visually represented in the seating chart window by a color-coded heat map indicating which students were coded for engagement and the number of engagement events connected to them. This visual nature of the seating chart heat map provides the user with an instant picture of student engagement – who, how many events are occurring in the classroom, whereas the timeline provides the “when” during the lesson.

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 student participation and engagement regarding gender, minority, ELL, or students with special needs, then this data is available.



Data Buttons and Locating S Codes in the Running Record – In the prior training level, the user learned how to locate specific code events in the *Running Record*. This is simply a reminder that the user can locate specific S code events in the *Running Record* and view the linked video using this function.

Things to Ponder Using S Code – How Can SMT Users Utilize the Specific S Code – Student Engagement Data?

- Consider how many of the students responded to at least one question and how many students were not part of the conversation. (Heat Map)
- Think about your teaching, and how many of the students responded to each other at least once, and what you might change to produce more student-to-student interactions. (*Interaction Patterns S-S #*)
- Think about the average number of responses per student, how that fits your student engagement goals, and how that number might be increased. [Total of S1-S5 plus (the total of S6-S9 x the number of students in the class) / number of students in class]
- Look at the various part of the class or type of lesson segment and determine if or how students were engaged as evidenced by vertical bars. Think about parts of the lesson that were absent of student contributions and engagement and how your lesson might be altered to produce more student engagement.
- Using the demographic toggles on the Seating Chart Heat Map, examine student engagement by demographics such as gender, minority, ELL, and Special Education – think about what the data suggests in terms of equity regarding student engagement.

Need More Practice Using S Codes with the Seating Chart?

If you wish to practice another lesson using S codes and seating chart numbers, create a new observation using the same seating chart, but use the URL for the video labeled SMT Practice Video Truck Hill M
<https://youtu.be/YSD7mNBbZ1Q>.

Lesson 5.5 Practice Data Capture Using S and M Codes with Seating Chart

A Complete Understanding – Having collected data on both S and M codes with analysis of such shown in *Student Engagement and Management Summary* results in a much better understanding of the student actions and dynamics of the classroom. Adding in data collection of the teacher's actions, probably the most important data to collect regarding improving teaching, helps to develop even more of a complete picture.

Practice S Codes and M Codes – Now, to merge what you have learned so far, complete an observation using both S and M codes while using student seating chart numbers.

Training Steps:

1. Create a *New Observation* using the same video and the same seating chart from Lesson 5.2.
2. Label this observation *Lesson 5.5 S M Seating Chart*.
3. The video URL to copy and paste into the lesson setup is again SMT Practice Video Truck Hill M -
<https://youtu.be/YSD7mNBbZ1Q>.
4. Proceed to practice coding using both the S codes and M codes using student seating numbers.
5. When finished, click done and examine the quantitative data analysis screens such as *Code Summary*, *Student Engagement*, *Management Summary*, and *Data Buttons* (Find Function) for teaching effectiveness indicators or things that the teacher might modify to have even more of a positive impact on the learner.

Training 6 – Teacher Actions: Four Question Types

Introduction - Teacher actions are one of the most important data to collect and analyze when examining indicators of effective teaching. It is widely known that teachers have a huge impact on the classroom learning environment. Most sources acknowledge that the teacher is the single most important factor affecting student learning (if the student comes to class). Research is very clear that teacher behaviors and actions impact or affect student learning, student behavior, student self-efficacy, and much more in a significant manner. As such, it is critical to examine teacher behaviors and actions in the context of lessons and teacher-student interactions.

This lesson focuses on a subset of teacher actions, probably the most important aspect of teacher-student interactions – how teachers pose questions to students. Hence, this lesson examines the four question types an SMT user can note while observing a teacher interact during a lesson. This training leads to more powerful data collection and analysis as Training 8 the user will learn to collect the four question types in association with collecting data on student actions learning in Training five. Then in Training 9, the other eleven teacher actions will be added in, and the user will collect data that represents the rich data that represents the complete picture of how teachers ask questions, students respond, and what the teacher does following the student response that greatly affects learning and student engagement. So, for now, we are going to focus solely on identifying and collecting the four question types.

Why only four question types? Because in the often face-paced arena of a classroom and teacher-student interactions the observer has enough time to discern four question types but not enough time to sort out more complex schemes that contain seven or eight types of questions without missing important actions taking place in the lesson. The four question types arise from a well embedded teacher observation system spanning back to Abraham and Schlitt (1972) who devised and used the SATIC Coding system for classroom observations.

The user will learn:

- How to recognize and collect data on the four question types
- How to view both raw and analyzed data.
- Questions to ponder about teaching when examining the question-type data and analysis.

Steps:

6.1 The user will read a short introduction to collecting data on teacher actions within the Training Supplement *Learning and Practicing the Teacher Action Codes* found in Appendix B. This material provides some insights into why it is so critical to study and collect data on teacher actions. This reading will also be applied to Training 9 where the user learns more about teacher actions that might follow a student's response.

6.2 View the *Video Overview of the Four Question Types*

Lesson 6.2 Video Overview of the Four Question Types

xxxxxxxxxxxxxxxxxxxxxxxxxxxx

6.3 The Four Question Types - read the following definitions of the four question types.

T3a. Asks Yes/No or Multiple-choice (M.C.) Question: This code is used when the teacher asks a question that requires a yes/no answer, or the teacher offers a couple choices from which the student then chooses an answer. For example, the teacher might ask “Does 100 kg or 50 kg have more mass?”

T3b. Asks Mere Recall Question: This code is used when the teacher asks a question framed for simply recalling information, facts, or a procedure they completed. For example, “Someone tell me what we did in yesterday’s lab” is simply asking the student to recall an event.

T4a. Asks Thought-provoking Short Answer Question: This code is used when the teacher asks a question that requires deep thinking, perhaps in the form of speculation, and cannot be answered with 1-2 words but does not ask for justification or explanation for the response.

T4b. Asks Thought-provoking Extended-answer question: This code is used when the teacher asks a question that requires deep thinking, perhaps in the form of speculation, cannot be answered with 1-2 words, but also requires a justification for that answer.

6.4 Practice identifying question types using a document with examples to hone their recognition of question types before moving on to identifying question types from video. The link to the practice document is [xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](#)

6.5 Practicing identifying question types while using video segments.

[Link to video](#)

[Cheat Sheet](#)

6.6 Finally, post-data collection the SMT user will learn to examine the raw and analyzed data displayed in *Code Summary* and *Teacher Actions Plus* in relationship to the goals for instruction.

[Code Summary Example](#)

[Teacher Actions Plus Example](#)

Training 7 – Collecting Wait-Time Using a Simple Methods

7.0 – Video Overview of Collecting Wait-time Data Using the Simple Method

7.1 – The What and Why: Knowing about and using wait-time is an important factor when examining teacher's action and how they affect student engagement and learning. Wait-time is one of those "laws" of teaching. Like gravity, it works, but there are very predictable and non-productive results when not in place. Wait-time has been practiced, either knowingly or unknowingly, since "teaching" began – at least by some teachers. It is the same today – wait-time is practiced by some but should be a part of every teacher's repertoire of teacher behaviors. The identified and documented benefits of wait-time are a semi-recent contribution (Rowe, 1963) with a flurry of studies that followed the initial reporting and documentation of wait-time.

What is wait-time? Generally speaking, wait-time is the pause, the think time, the time when neither the teacher nor students are talking, that occurs between comments, statements, responses, or questions posed by either the teacher or student(s). If the goal is to get students to think, and teachers ask questions that require thoughtful answers, speculation, and justification for their ideas, then perhaps students need a bit of time to think about the question and construct a response. As such, research indicates that if teachers increase their average wait-time to at least 3.5 seconds, there is an extensive list of positive things that might occur when the average wait-time is 1 second or less. A few of the predictable and positive results of using sufficient wait-time are increases in:

- * The length of student's responses increases between 300% and 700%, and in some cases, more depending upon the study
- * More inferences are supported by evidence and logical argument
- * The number of questions asked by students increases, and the number of experiments they propose increases
- * Student-student exchanges increase; teacher-centered "show and tell" behavior decreases.
- * Failures to respond decrease.
- * Disciplinary moves decrease.
- * The number of appropriate responses increases
- * The number of low achievers contributing increases
- * Different students begin contributing

When combined with better questioning, wait-time is a potent package that gives students ample time to think, allows them to keep thinking without being pulled out of their thinking by more teacher or student talk only after a second or two, and therefore keeps them thinking and therefore engaged in the lesson. When students remain engaged in the lesson, the cycle of learning continues to new heights. When the quickest thinking student is called on right away, the thinking process of the other students is squelched, and given the fastest students (by a few seconds) get the recognition, it creates an impression of not being capable and not up to par regarding expectations. We know that sometimes the "best" answers are those that are allowed to ruminate for a bit, and with average wait-times of less than one second, there is simply not enough rumination time for creative and well-thought-out answers to form and take shape.

In short, knowing the average wait-time can be very helpful. Wait-time 1 is merely giving students a chance to think, so after asking a question, teachers pause and give students the time needed to think about an answer (not the typical few milliseconds, but 3-5 seconds or more). Even if some students raise their hands, the other students can still think for a few seconds. Wait-time 2 is waiting 3-5 seconds or more **after** the student has responded (refraining from reacting to that student's response or restating, repeating, or re-phrasing the response or calling on another student). Beyond the initial wait-time research and only because SMT can measure such, the author has created two more categories of wait-

time that may be indicators of rich classroom discussion and engagement. The following are the functional definitions of how SMT captures wait-time data and differentiates between WT 1, 2, 3, and 4.

- Wait-time 1 (WT1; T-S) is the pause between a teacher action (T0 - T12) and a student action/response occurring (S1 – S9).
- Wait-time 2 (WT2; S-T) is the pause between a student action/response (S1 – S9) and the teacher following up the student response with a statement, response, or another question (T1 – T12).
- Wait-time 3 (WT3; T-T) is the pause between a teacher action such as statement, response, or a question (T1 - T12) followed by another teacher action (T1 - T12). WT3 is like WT1, but the teacher action ends the pause, not the student's action.
- Wait-time 4 (WT4; S-S) is the pause between a student action/response and another student action/response begins. WT4 is like WT2, but ends with a student action, not the teacher's action.

This training will show the SMT user how to collect just wait-time by itself without collecting any other data using the simple and fast method.

7.2 The How To of Collecting Wait-time Data the Simple and Fast Way – SMT Beginning User

If the user only wants to collect wait time, it is quite simple, and the user doesn't have to learn or use any specific T or S codes while doing so.

- To collect WT in a simple manner, use the following actions, repeated. After a T or S action ends, the user taps ANY T button to note the end of a T action or ANY S button to note the end of an S action. This triggers the wait-time bar to indicate "Wait-time Timing," and the clock will keep timing until the user clicks on this wait-time bar (now shows Wait-Time Off) just as soon as the teacher or a student begins to vocalize something. This is one cycle of wait-time and the whole data collection period of the lesson is a repeat of those actions. Now the wait-time for that incident has been recorded, and the next cycle begins with the user's next action when they click on a T or S button as soon as that person is done talking. The wait-time will be summarized under the *Wait-Time Summary* tab in the quantitative analysis mode.

Index	Code	Description	Event Length
S1: S asks T ?		T0: monitor	L1
S2: S asks S ?		T1: Present Info	L2
S3: S comnt 2 T		T2: Directions	L3
S4: S comnt 2 S		T3a: yes/no ?	L4
S5: S ansn ?		T3b: sht ans ?	L5
S6: S dry erase rsp		T3c: sht spec ?	L6
S7: S digital rsp		T4: Ing ans-jtify	L7
S8: Thk Pair Shr		T5: reject ans	L8
S9: Choral rspns		T6: Acksn ans	L9
M10: S misbeha		T7: cnfrm ans	L10
M11: T adres mis		T8: repeat ans	L11
		T9: T clrfy ans	L12

- There is a bonus set of data when WT is recorded in such a manner. The total T time vs total S time will be listed under *Code Summary*. This ratio notes how much of the lesson was teacher talk vs. how much of the lesson was student talk. This ratio is an important number since a T to S ratio of 90%/10% is a very teacher-centered lesson with very little student engagement. A 60/40 lesson has much more student engagement, and a 40/60 lesson looks very different in terms of student engagement.

Lesson 7.3 Analyzing Wait-time Data

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 type, by events, by total time, and averages for each wait-time (shown below). As noted above, increasing the average wait-time to the threshold of 3.5 seconds or above results in many positive affects to the learner and to the classroom discourse.

Note that wait-time averages can also be broken down by specific T and S code types (learned in Training 10) and this type of critical data summary can answer questions and identify tendencies in the classroom, such as does the teacher use more wait time when they pose a higher-level question requiring more think time?

The screenshot below shows the total number of events and total time for each type of wait-time, with the average for such displayed. The text in parenthesis is a reminder for the user as to what action (Teacher or Student) proceeds the pause, and what action ends the pause. For example, Wait-Time 1 (T-S) is a reminder that the Teacher was talking, a pause occurred, and Student talk ended the pause.

The data displayed here indicates a need for significantly increasing wait-time during this lesson.

The screenshot shows a software interface for analyzing wait-time data. On the left, a vertical sidebar lists various reporting options: Data Buttons, Lesson Demographics, Pre-Lesson Questions, Code Summary, Lesson Summary, Management Summary, Student Engagement, Teacher Actions Plus, Interaction Patterns, Wait-Time Summary (which is selected and highlighted in grey), Small Groups, Post Lesson Questions, and Summative Comments. The main area contains two tables. The top table is a summary table with columns: Wait-Time Type, Total Events, Total Time, and Average. It shows three entries: Wait Time 1 (T-S) with 1 event, 00:01 total time, and 00:01 average; Wait Time 2 (S-T) with 1 event, 00:03 total time, and 00:03 average; and Wait Time 3 (T-T) with 1 event, 00:02 total time, and 00:02 average. The bottom table is a detailed table with columns: Code, Wait-Time 1, Wait-Time 2, Wait-Time 3, and Wait-Time 4. It shows four rows of data, each starting with a question mark '?'.

Wait-Time Type	Total Events	Total Time	Average	
Wait Time 1 (T-S)	1	00:01	00:01	
Wait Time 2 (S-T)	1	00:03	00:03	
Wait Time 3 (T-T)	1	00:02	00:02	
Code	Wait-Time 1	Wait-Time 2	Wait-Time 3	Wait-Time 4
?				
?				
?				
?				

Training 8 – Merging Student Actions and Teacher Questioning

Introduction – Training 8 is about developing more speed, becoming more accurate when clicking on codes to match the action, and learning a bit more about data analysis to dig deeper into the data and provide higher quality and more sophisticated feedback to the teacher being observed.

The user will learn:

- To learn to collect data on student actions and the four question types.
- What the raw data and analysis shows about student actions, teacher questions, and the relationships between them.

Training Steps:

1. Watch the video overview that shows using all the codes in action.
2. Complete a series of coding videos using the S Codes and the four question types of T codes.
3. Develop speed and accuracy of observing and coding.
4. Learn more about the analysis from the many data points and the data analysis, heat maps, graphs, and charts.

Lesson 7.0 Video Overview of Data Collection and Data Analysis Using T, S, and M Codes needs to be video 8

<https://youtu.be/bjXvB5RrvOc>

Lesson 8.1 – Practice Capturing Student Actions and Four Question Type T Codes at Slow Speed: Data analysis can be very robust and powerful when both T and S codes are collected. Therefore, most observations use both T and S codes. You have already learned to capture S codes and the four question types separately so in this lesson you will collect both during an observation. If student misbehavior is an issue in a classroom with off-task chatting or other student misbehaviors, then using M codes helps uncover trends and patterns of misbehaviors and teacher's reactions. This additional data M code data collection will be incorporated into Practice 10.

Training Steps:

1. Create a *New Observation*, using any of the following videos for the observation.
2. Set up a *Seating Chart* using the same five avatar seating chart.
3. Choose *Save and Start*.
4. Choose Quantitative.
5. Complete the observation using the four T question codes (T3a, T3b, T4a, T4b) learned in Training 6 along with the S codes with seating chart student numbers learned in Training 5.

Videos for Practicing Observations

SMT Practice Video Float A - <https://youtu.be/oxxazkrBChg>

SMT Practice Video Float Sink B - <https://youtu.be/k38GViRMJIM>

SMT Practice Video Truck Hill L - <https://youtu.be/pjv0FSyR5sw>

SMT Practice Video Swinging Spheres - <https://youtu.be/XIPKXIkeHMA>

Lesson 8.2 – Data Analysis Using for Student Actions S Codes and Four Question Type T Codes

Introduction - Being able to understand teaching strengths and weaknesses is the linchpin for the continued growth of the skills needed to become a highly effective teacher. Knowing what data can be used to provide more specific feedback to the teacher is the target of this lesson. Collecting question types and student actions data compounds the level of rich analysis possible when using SMT.

Once accurate data has been collected, there are many analysis features of this tool from which to draw conclusions or use to establish new targets for modifying teaching to move toward the highly effective teacher level.

Training Steps:

1. Read through the following section to better understand the potential analysis when using the T and S codes.

Questions to Ponder About Question Types and S Codes – The Combined Actions Data

Since this observation included T Codes – Four Question Types and S code data, the user could contemplate all the “Questions to Ponder” from the previous S Code and Four Question Types - T training. While SMT can be used to capture a lot more information, just this data alone is a rich trove of information.

In addition, now that T actions are coded and analyzed along with S actions, there are additional things to consider due to the interaction and dynamics between the teacher and student. For example, users could consider how a change in teacher questioning actions might:

- Stimulate more individual student engagement.
- Stimulate more student-to-student exchanges.
- Reduce behavior issues.
- Encourage students to offer up more questions that would clarify their thinking.
- Help the teacher understand where the student is faltering.

Training 9 – Learning About the Remaining Teacher Actions and Behaviors

Introduction – This is the level that is going to require a bit more effort and practice. But the whole set of T codes is probably the most important data to collect and analyze. It is widely known that teachers have a huge impact on the classroom learning environment. Most sources acknowledge that the teacher is the single most important factor affecting student learning (if the student comes to class). Research is very clear that teacher behaviors and actions impact or affect student learning, student behavior, student self-efficacy, and much more in a significant manner. As such, it is critical to examine teacher behaviors and actions in the context of lessons and teacher-student interactions. After mastering this level, the SMT user will be able to collect a plethora of critical T and S-related data that results in a rich and robust analysis, therefore laying the foundation for evidence-based commentary, feedback, and suggestions for improving teaching.

The user will learn:

- The other eleven T codes that make up the set of fifteen teacher action codes (T codes) and what they represent
- How to view both raw and analyzed teacher action data when collecting T codes
- How to view the video linked to each of the data points
- How to use *Code Summary* to examine Teacher Actions (T codes) vs. Student Actions (S codes) total time and the ratio of T to S times
- How to use *Teacher Actions Plus* to view a digital footprint of all the data collected in the observation and discern key information and tendencies.
- How to view the *Interaction Patterns* data that show tendencies and predominant teacher-student interactions.
- Questions to ponder about teaching when examining the T code data and analysis

Steps - During this training, the user will then practice identifying actions representing T codes, the practice data collection entering T codes while viewing a pre-recorded lesson of someone teaching five avatar students. Finally, the user will view and explore the analysis of the T Code data collected in the observation under *Code Summary*, *Teacher Actions Plus*, and *Interaction Patterns*.

1. Watch the video overview of using the T codes, and read 9.1 to learn what each of the T code buttons represents in terms of teacher actions.
2. Read the subsequent pages in the manual pertaining to T codes and become familiar with the T code definitions shown in Lesson 6.1.
3. Complete the paper-pencil activity to practice recognizing teacher actions and pairing them with a T code.
4. Practice identifying T codes while watching a video of a teacher teaching to develop speed and accuracy.
5. Identify key features of the T code analysis and incorporate the resulting data when looking for ways to improve teaching or when providing evidence-based feedback to others.

Lesson 9.0 Video Overview of Using the T Codes

https://youtu.be/1Evn9j8e_DQ

Lesson 9.1 The T Codes - There are sixteen codes that are used to indicate teacher actions and behaviors. All codes (except T13) are event/timing codes, and the T Codes are:

T0. Monitoring class: This code is used when students are working, and the teacher monitors the classroom or perhaps does administrative work, such as taking attendance.

T1. Presenting Information: This code is used when the teacher lectures or presents information in the form of extended teacher-initiated commentary. This teacher talk is more than the one to two sentences that characterize a T2 below. One rule of thumb is if the teacher is not giving directions but making statements or providing information that goes over about 15 seconds, they have moved into a “presenting information” phase and coded as a T1.

T2. Give Directions: Gives Directions, Makes a Statement, or Asks a Rhetorical Question: This code is used when teacher-initiated statements such as directions, statements, or a rhetorical question to which no answer is expected are used. “Statements” can normally be thought of as one to three sentences.

Four Question Types (learned in Training 6)

T3a. Asks Yes/No or Multiple-choice (M.C.) Question: This code is used when the teacher asks a question that requires a yes/no answer, or the teacher offers a couple choices from which the student then chooses an answer. For example, the teacher might ask “Does 100 kg or 50 kg have more mass?”

T3b. Asks Mere Recall Question: This code is used when the teacher asks a question framed for simply recalling information, facts, or a procedure they completed. For example, “Someone tell me what we did in yesterday’s lab” is simply asking the student to recall an event.

T4a. Asks Thought-provoking Short Answer Question: This code is used when the teacher asks a question that requires deep thinking, perhaps in the form of speculation, and cannot be answered with 1-2 words but does not ask for justification or explanation for the response.

T4b. Asks Thought-provoking Extended-answer question: This code is used when the teacher asks a question that requires deep thinking, perhaps in the form of speculation, cannot be answered with 1-2 words, but also requires a justification for that answer.

Eight Things Teachers Might Do After Students Respond

T5. Reject Student Comment, Answer, or Question: This code is used when the teacher rejects a student’s response, indicating that a student’s answer is wrong, or the teacher cuts off a student’s response.

T6. Acknowledges Student Comment or Answer: This code is used when the teacher acknowledges the student without evaluation. For example, the teacher might give a neutral response indicating the student was heard but does not confirm or reject the student’s answer.

T7. Confirms Student Comment or Answer: This code is used when the teacher evaluates a student's response positively and the teacher clearly indicates the student was correct. This might also be in the form of praise.

T8. Repeats Student Comment: This code is used when the teacher repeats the student's response.

T9. Clarifies or Interprets What Student Said: This code is used when the teacher re-words or interprets a student's response. This technique may be used to clarify, emphasize, or improve a student's response.

T10. Answers Student Question: This code is used for short, succinct responses to student questions.

- Note: If the response becomes long-winded and extends beyond 15 seconds, a T1 should be used to indicate that the teacher responded with a mini lecture when responding to the student question.

T11. Asks Student to Clarify or Elaborate: This code is used when the teacher asks a student to extend, repeat, or clarify a student's response.

T12. Uses Student Question or Idea: This code is used when the teacher redirects a student's question to another student or to the small group or whole class.

Other

T13. Annoying Verbals or Non-Verbals: T13 is an event-only code to be used when noting something nonverbal in nature, such as an annoying habit that is worth noting and relaying to the teacher. Use this when the teacher displays annoying verbals or non-verbals that detract from instruction or perhaps distract students.

Lesson 6.2 Learning T Codes on Paper: When observing someone teach, there is a lot of action taking place, and the observer doesn't have much time to sit and think about which teacher action they just saw because the next teacher or student action is taking place. Therefore, learning to recognize a particular T code quickly is important. The SMT team has developed a set of training exercises to develop this skill set and scaffold your skill to a level that will allow you to keep up with the pace of instruction in the classroom. It begins at a slow pace, first with practice on a transcript to develop accuracy in coding T codes before using video. You will need to download the *Interactions Module* found at SeeMeTeach.com - under the heading **Support and Training**, then **PD Skill Development Modules** and work your way through **Chapters 1-5** of the Interactions Module - follow the instructions to develop proficiency with recognizing specific T code events. Read about the "Teaching Fingerprint" and read about the examples of each code while using the mnemonics to help you remember each code. Then complete the practice sheets coding the teacher's actions on the transcripts, checking your answers with the key, followed by more practice until attaching a code to a teacher's action becomes easy and fast. Learning the T codes on paper is an important step to recognizing a specific teacher action and coding it to one of the 15 categories. When confidence has been developed to recognize T code actions, proceed to Level 9.3.

Lesson 9.3 Practice – Data Capture Using T Codes with Video: Now, you will practice coding only T codes while watching a short video.

1. Set up a *New Observation*, copy the URL for the SMT Practice Video Truck Hill L - <https://youtu.be/pjv0FSyR5sw> into the video window.
 - a. Note: There is no need to create a seating chart this time since S or M codes are not used in this practice session. Also, note that some users need to click pause on the video to give them time to determine which teacher action (code) they just viewed which is ok early on in this process, but the goal is to build up a skill level that keeps up with the pace of teaching.
2. Choose *Save and Start*, then choose *Quantitative*.
3. Begin the data collection by pressing play and immediately press an L code to start the data collection timing clock.

Note that the user can toggle on or off any set of T, S, M or U codes as well as the wait-time bar to reduce the complexity of the data collection screen. When first practicing T codes, the user might want to have only the T codes displayed (toggle off the other codes).

Due to the quantity and complexity of the T codes, you might need to practice with more than one video before you have confidence in using T codes. When you are confident identifying T codes, then use both T and

S codes during an observation. The goal is to be able to keep up with the pace of the video. The links below to access more videos to use to practice coding T, or T and S codes.

SMT Practice Video Float Sink A - <https://youtu.be/oxxazkrBChg>

SMT Practice Video Float Sink B - <https://youtu.be/k38GViRMJIM>

SMT Practice Swinging Spheres - <https://youtu.be/XIPKXIkeHMA>

9.4 T Codes – Teacher Actions Analysis Options

Introduction - In this lesson, the user will learn how to analyze the T code data analysis and look for indicators that will help identify a teaching fingerprint as well as identify other indicators that can be used to help improve teaching and as evidence-based feedback to others.

Lesson 6.4 Video Overview of T Code Analysis

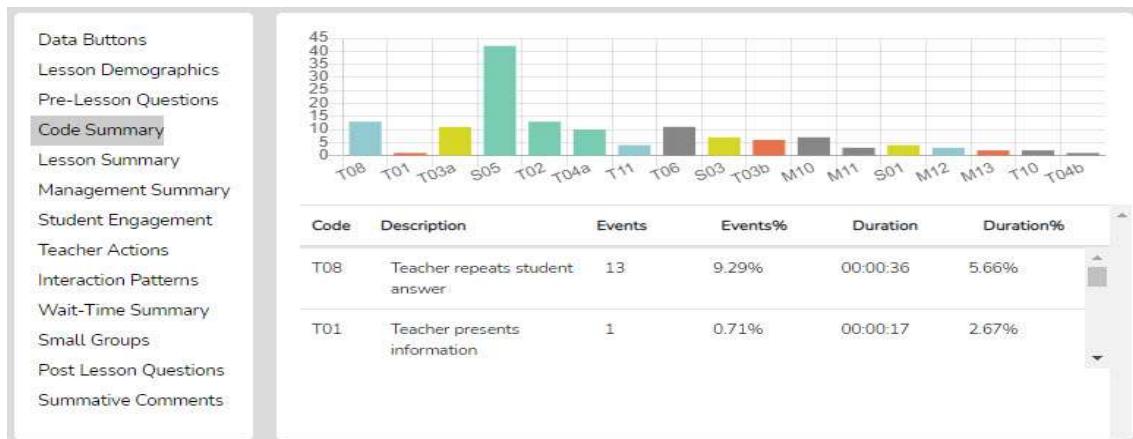
<https://youtu.be/fcHEvdz0X-Q>

Training Steps:

1. Examine the raw data and analysis from the 9.3 observation that was only coded using T codes.

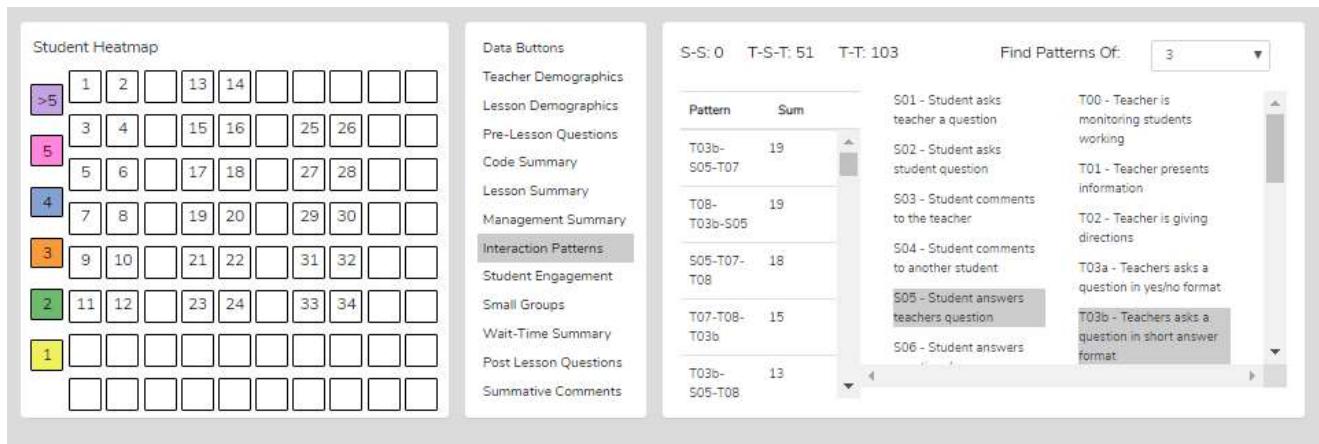
Code Summary – As stated before, the *Code Summary* provides a graph of the number of events of each code used during data collection, in this case, showing relative and specific use of T codes. Underneath the graph is a data table that displays data for each of the specific codes by frequency of an event, frequency of an event compared to the overall total number of events, amount of timecoded by the specific event, and time accrued for that event compared to the total time of all the events. At the bottom of this data table, the T code data have been tallied and again turned into percentages of events and time. The *Code Summary* data provides indicators of teacher tendencies and helps to answer questions such as:

- What are the counts, percentages, and total time for each T code?
- What were the predominant T codes exhibited in this lesson, and how does this match your expectations?



Interaction Patterns – Teachers have teaching habits, tendencies, or overt patterns of how they interact with students. These habits are often the same regardless of the lesson or the class and might be repeated year after year unless specific analysis and intervention occur. These well-ingrained ways of interacting with students are like fingerprints, an interaction fingerprint (Berg, 2019). Research has demonstrated that some patterns are more productive for getting students to think deeply, take risks, listen to other students' ideas, pose more creative answers, or be more thoughtful about the task at hand. The interaction pattern data analysis SMT provides helps to identify predominant patterns displayed by the teacher.

To do this, SMT takes all the T and S codes and looks for sequential patterns and displays those from most to least. This allows the user to compare patterns of interactions to the goals of instruction. For example, if the most predominant code is T3b-S5-T7 and has a Sum of 19, it means that the teacher exhibited that sequence of three codes 19 times during this lesson observation. The teacher asked a yes/no question, followed by a student response, followed by confirming the answer.



Why Are Interaction Patterns Important? - Examining the most to least predominant patterns help us understand how or if our teaching matches our goals for instruction. For example, if our goal of the lesson is to get students to think deeply about the subject matter or processes of science, but we don't find a pattern that includes T4a or T4, or no T11 or T12, then doubt is cast on whether we are facilitating this goal of student thinking, or not.

Identifying Predominate Patterns of Interaction – In order to look for predominate patterns of interaction in your observation:

1. Go to *Interaction Patterns* and, first, choose the length of the pattern (from 3-6 events in sequence – it is suggested to begin with a pattern of 3).
2. Look at the left-hand column showing *Pattern and Sum* (which shows the number of events of that sequence).
3. Click on that pattern, and the descriptions of codes within that sequence are highlighted on the right-hand side (this way, the user doesn't have to remember what a code represents).
 - a. For example, if the most predominant code is T3a - T7 - T9 has a Sum of 21, it means that the teacher used that sequence of three codes 21 times during this lesson observation. The teacher asked a yes/no question, followed by a student response, followed by confirming the response.

Other Predominate Patterns of Interaction - In addition, at the top of this section of data are counts for how many times:

- T-T was exhibited in the lesson (teacher action followed by teacher action; for example, the teacher asked a question, then rephrased the question).
- S-S was counted (how many times a student action was followed by another student action, such as a student responding to a teacher posed question followed by another student asking that student a question)
- T-S-T was counted (teacher action, followed by student action, followed by teacher action – this is the normal interaction in class, but this pattern could be any number of things - therefore, the pattern count helps identify the predominant fingerprint of the teacher).



What does this information tell us as observers and teachers being observed? In this case, an S-S pattern occurred zero times, indicating that a student did not respond to another student. This essentially is a lesson devoid of student-to-student interactions. Fifty-one times the teacher responded after a student response (the normal classroom interaction pattern that is often less effective), and one hundred and three times, the teacher followed themselves up with another statement or question. This rough measure of classroom interaction tells us that the teacher is the main communicator in the classroom; students are somewhat passive and do not interact with each other in some manner.

How SMT Users Can Utilize the Interactions Patterns – Teacher and Student Interactions Data

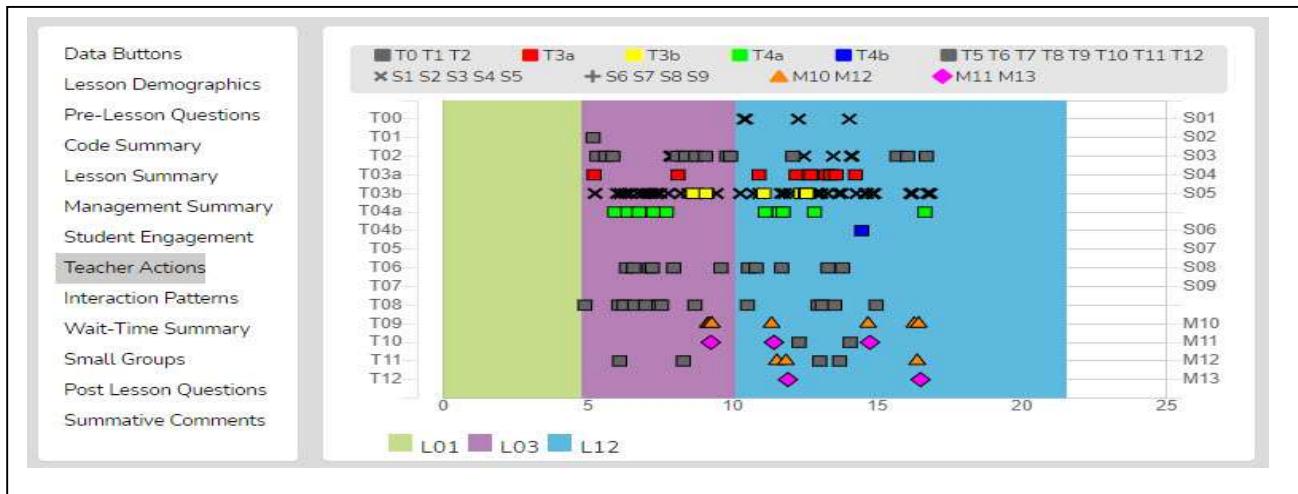
- The longer the lesson, the more probability that the predominant patterns stand out. This allows the user to easily identify the teacher's most frequent patterns of interacting with students.
Consider how these patterns support or do not foster the goals and intentions of the lesson.
- Identify what patterns should be present to best support the goals and intentions of the lesson.
- Look at the S-S counts and consider how that amount of student-student interaction fits with the goals of the lesson and the strategy used for the lesson. Identify how changing the interaction pattern might have fostered more student-to-student interaction.
- Look at the T-S-T counts and consider how this number balances with the S-S counts.

Data Buttons and Locating T Codes in the Running Record - To search for specific examples of T codes exhibited in the video, go to *Data Buttons*, click on T code that you wish to view on the video, and the video

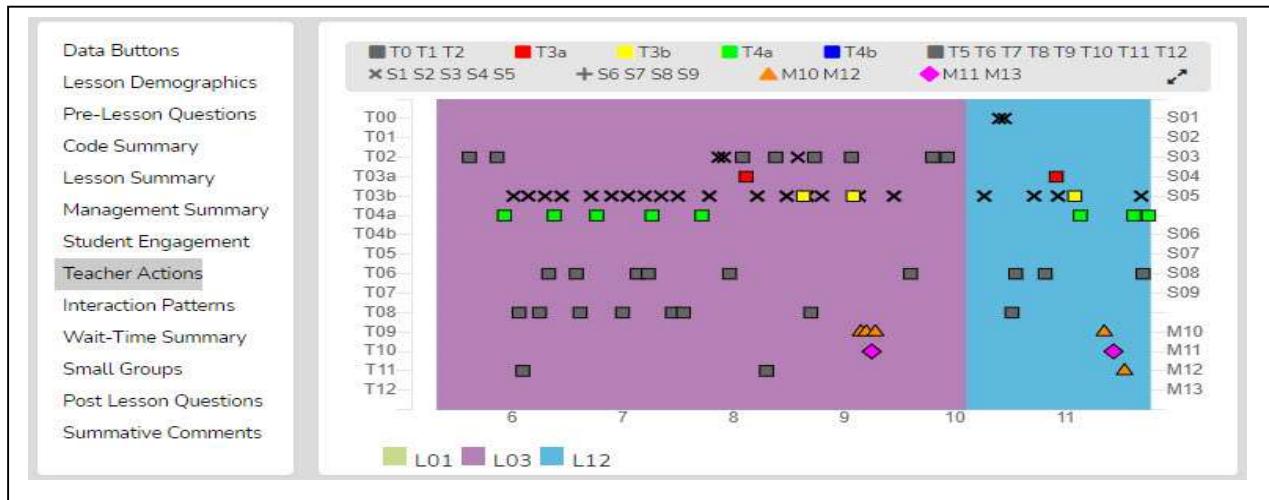
segment should show the teacher displaying that specific T code. For more of that specific T code example, click on *Next* or click on a different T code button to view the video of another T code.

Teacher Actions Plus Summary – The *Teacher Actions Plus* summary is a timeline showing all the data collected during the observation or the digital teaching story from beginning to end of the lesson. The data are displayed 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 occurred 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, 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 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 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. With the mouse wheel, the user can zoom in or out when the symbols become crowded or reset the zoom to normal by clicking the Reset button, which is the double arrows (top right).



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.



Things to Ponder About T Codes – How Can SMT Users Utilize the Specific T Code - Teacher Actions Data

- Looking at *Code Summary*, the data table, and the graph:
 - What were the predominant T codes exhibited in this lesson?
 - When looking at the data for the four question types (T3a, T3b, T4a, and T4): what is the tendency of the teacher to ask open-ended questions requiring students to think more deeply, to speculate, and construct answers vs. asking questions that require a yes/no or short-answer memory type response?
 - If the goal was to dig into student thinking at a deep level, consider the type and number of questions asked (and your memory of the teacher asking questions in the video). What might you conclude?
 - Look at how many and what types of questions were asked. How did this affect the amount and type of student engagement?
 - Looking at the T5-T12 counts, what can you conclude about how the teacher responds following a student response if their goal was to encourage student responses and keep digging into what students were thinking?
- Looking at *Interaction Patterns*, examine the 3-code pattern tendency, then the 4-code pattern tendency. How are the most common patterns consistent with the goals for the lesson? What are some changes to how the teacher interacts with students that would be more consistent with the intentions for the lesson?
 - How did the teacher initiate questions and then respond to student thinking? How did the teacher's tendencies encourage or discourage student responses and engagement?
 - When students respond – what does the teacher tend to do? Do they tend to judge responses, acknowledge, and then clarify for the student, or instead, ask the student to clarify? Different tendencies are more effective depending on the goals of instruction and level of thinking or engagement from students desired by the teacher.
- Looking at the *Teacher Actions Summary* screen:

- What question types were used in the lesson? What followed questions in terms of S codes – one student response, or was it more than one student response? After the student(s) responded, what did the teacher do next?
- How did the teacher use the whole group response engagement S codes (S6-S9) to generate answers and provide maximum feedback to the teacher? If S6-S9 were not used, what evidence exists indicating the teacher is attempting to increase students' oral contributions to the lesson?
- Knowing that T codes (teacher responses) T6, T11, T12, and sometimes T8 tend to help get and keep students thinking more so than T5, T7, T9, and T10, what does the visual tell you about the teachers use of the various response codes?
- What stands out about the student misbehavior actions M10 and M12, and then how would you characterize the teacher's reaction to student misbehaviors M11 and M13?

Lesson 9.5 Practice – Data Capture Using T Codes and S Codes with Video: Now, you will practice coding using both T codes and S codes while watching a short video.

1. Set up a *New Observation*, copy the URL for the SMT Practice Video Truck Hill L - <https://youtu.be/pjv0FSyR5sw> into the video window.
 - a. Note: There is no need to create a seating chart this time since S or M codes are not used in this practice session. Also, note that some users need to click pause on the video to give them time to determine which teacher action (code) they just viewed which is ok early on in this process, but the goal is to build up a skill level that keeps up with the pace of teaching.
2. Choose *Save and Start*, then choose *Quantitative*.
3. Begin the data collection by pressing play and immediately press an L code to start the data collection timing clock.

Note that the user can toggle on or off any set of T, S, M or U codes as well as the wait-time bar to reduce the complexity of the data collection screen. For practicing T codes, the user might want to have only the T codes displayed (toggle off the other codes).

Training 10 – Collecting Wait-time AND T, S, and M Codes with Seating Chart

Introduction - At this level, the user has decided to collect the maximum amount of data using the L, T, S, and M codes using a seating chart AND collecting wait-time data. For any observation, collecting wait time is optional. But once the user learns how to use the wait-time bar, they can easily develop a rhythm for incorporating it into the sequence of buttons. If you did not yet go through Training 7 – Wait-time Simple Method, look back and read the introduction to understand the significance of using WT.

Or, repeat the WT intro here?

Since wait-time is a critical factor that significantly impacts student engagement, it is worth it to include wait-time into the data collection. Therefore, at this level of training, the focus is on learning how to collect wait-time data and using all the other codes.

The user will learn:

- How to collect wait-time data in association with T codes and S and M codes in association with seating chart numbers.
- How to analyze wait-time averages and wait-time specific to T and S codes.
- Questions to ponder about the teacher's use of wait-time.

Steps - First, the user will learn to collect wait-time data while collecting T code data and S and M code data using seating chart numbers. Then the user will view and explore the analysis of the wait-time data, followed by pondering how wait-time might be generally improved or specifically increased regarding T codes such as the four questioning types or the responding codes.

Lesson 10.0 Video Overview of Using T, S, and M Codes, Using Seating Chart, Wait-Time, and Speed

https://youtu.be/_IxHQ1HMoW0

Method 2 - Steps and Output for Regular Way to Collect Wait-Time:

Steps for Collecting Wait-time Data

1. During the lesson, when a T or S code is tapped at the end of an event, the wait-time bar changes from white to blue, and the bar now displays “Wait Time Timing.”
 2. Timing will continue until the observer notes that the teacher or a student begins to talk. To do this, the observer taps the WT bar to turn off timing, which also changes the label on the WT bar to “Wait Time Off.”
 3. WT is recorded for the preceding code in the *Running Record*.
 4. And the cycle begins again with the user ready to tap a T or S code as that person finishes talking.

Since all T and S codes are tapped at the end of an event, tapping the wait-time bar to turn off wait-time also initiates the start of timing for what is going to be the next code.

Index	Code	Description	Event Length
	S1: S asks T ?		
	S2: S asks S ?		
	S3: S commt 2 T		
	S4: S commt 2 S		
	S5: S answrs ?		
	S6: S dry erase rsp		
	S7: S digital rsp		
	S8: Thk Pair Shr		
	S9: Choral rspns		
	M10: S misbeha		
	M11: T adrs mis		
		E N D W A I T T I M E U N R E	T0: monitor T1: Present Info T2: Directions T3a: yes/no ? T3b: sht ans ? T3c: sht spec ? T4: Ing ans-jstfy T5: reject ans T6: Ackn ans T7: cnfrm ans T8: rpeat ans T9: T cliry ans
			L1: L2: L3: L4: L5: L6: L7: L8: L9: L10: L11: L12:

Note: The observer does not have to worry about which WT they are capturing. If they just tap the WT bar to turn off WT timing, then WT data is collected, and the software knows if the pause is WT1, 2, 3, or 4.

Unlike the easy method above, in this case, the user is also noting the type of T actions or type of S actions taking place in the lesson. Therefore, instead of tapping any old T or S code, they tap the specific T or specific S code being exhibited. The value of this method is that the software will give the user averages for WT 1-4 and report the WT in association with the T or S codes that preceded the WT. This can be important data as it might show the user using more WT for higher-level questions than for lower-level questions, or it might show very little WT in association with some type of teacher responses vs. other types.

How to Collect Wait-Time Using Student Numbers

1. When the teacher has finished asking a question and the T code is tapped, the W-T bar turns to blue and is timing.
 2. As soon as a student begins to respond, the user clicks the W-T bar, turning off the wait-time and then clicks the student number.
 3. When the student finishes speaking, the appropriate S code should be clicked.

Questions to Ponder and How SMT Users Can Utilize the Wait-Time Data – Student and Teacher Think Time

- How does the WT1 average correspond to the teacher's intention for using wait-time to give students ample opportunity to think about the teacher's question?
 - How does the WT2 average correspond to the teacher's intention to use wait time to give students ample time to think about a student's response and respond to that student? (Look at the relationship between WT2 average and the S-S count in *Interaction Patterns*.)
 - How does the average WT for question types differ when comparing lower level questions and higher-level questions where students need more think-time to generate an answer?
 - If the WT average is lower than expected or desired, what is the teacher's concrete plan for increasing their WT? How will they know if they have improved their use of WT?

Lesson 10.2 Practice Collecting Wait-Time, and T, M, and S Codes Using a Seating Chart

Training Steps:

1. Set up a New Observation using any of the following URLs.

SMT Practice Video Float A - <https://youtu.be/oxxazkrBChg>

SMT Practice Video Truck Hill L - <https://youtu.be/pjv0FSyR5sw>

SMT Practice Video Swinging Spheres - <https://youtu.be/XIPKXlIkeHMA>

2. Label the *Lesson Subject* as Lesson 10.2 WT
 3. Add a seating chart for the five avatar students
 4. Choose *Quantitative* observation
 5. Collect data using T, M, and S codes using student seating chart numbers and the wait-time bar.
 6. When finished, click *Done*, then proceed to Lesson 10.3.

Note: If returning to this lesson later, go to the *Dashboard* locate *Lesson 10.2 WT*, click on the plus symbol to open up the expanded *Dashboard*, and click on the green checkmark under the *Quantitative* column to return to the quantitative analysis screen for the WT data collected.

Lesson 10.3 Analyzing Data Including Wait-time Analysis

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, by events, by total time, and averages for each wait-time (shown below). Wait-time averages are also broken down by specific T and S code types. This type of critical data summary can answer questions and identify tendencies in the classroom, such as does the teacher use more wait time when they pose a higher-level question requiring more think time?

Data Buttons	Wait-Time Type	Total Events	Total Time	Average
Lesson Demographics	Wait Time 1 (T-T)	5	00:17	00:03
Pre-Lesson Questions	Wait Time 2 (S-T)	11	00:18	00:01
Code Summary	Wait Time 3 (T-S)	7	00:16	00:02
Lesson Summary	Code	Wait-Time 1	Wait-Time 2	Wait-Time 3
Management Summary	T01			
Student Engagement	T02	6.50		1.00
Teacher Actions	T03a	1.00		
Interaction Patterns				
Wait-Time Summary				
Small Groups				
Post Lesson Questions				
Summative Comments				

Training 11 – SMT Black Belt 2 - Learn About G Codes: Small Group Interactions

Introduction - A common pedagogical strategy used in classrooms is to group students for labs, discussions, cooperative learning, working problem sets, or a variety of other reasons. All educators hope that rich and equitable interactions occur between small group members and that all small group members are involved in the work and conversation. However, small groups are often notorious for having a subset of the group doing most of the work, or one or two members take control of the work or discussion resulting in the other group members playing a very passive role or conversation in the group diverts to non-lesson related topics.

The goal of instruction is to get ALL students involved equitably and productively related to the goals and objectives for that lesson. We know that there are ways to make group work more productive by structuring a lesson using cooperative learning roles. This pedagogically sound strategy has most, or all of the group members equally engaged and contributing to the lesson. But how do we know that our plans were effective concerning such? Student numbers are also present when groups are set up in SMT using the seating chart. When using a group code for collecting any S or M code data, the data contains both the group number and student number. For example, G1:8 is group 1, student 8. Observing and collecting this data can be useful when examining group dynamics and engagement when analyzing individual student engagement or examining individual student misbehaviors or misbehaviors arising as part of a group.

The user will learn:

- How to first collect and analyze S code and M code associated with the small group seating chart numbers to develop a data set indicating the richness and equity of interactions between members of a small group.
- Then how to collect T, S, and M code data that adds in the factor of the teacher actions and interactions with small groups.
- Questions to ask to determine if small groups are functioning with equity between group members and efficiency.
- Questions to ask and data to examine regarding the effectiveness of teacher's interactions with small groups.

Steps - First, the user will learn to collect S code data using small group seating chart numbers. Then the user will view and explore the analysis of the S code data within each group shown within *Group Summary* and learn how the indicators may suggest how to elevate student interactions or approach more equitable interactions within a group.

[Lesson 8.0 Video Overview of Data Collection and Analysis Using G Codes](#)

https://youtu.be/8l_RtkGnTy8

Lesson 11.1 Introduction to Group

Setup – When setting up a new observation in the *Seating Chart*, after entering individual student numbers on the seating chart, the user also can design small groups of students by group number. Therefore, while capturing data during an observation, M and S code data can be prefaced by a group number and the student number within that group.

The screenshot shows the 'Seating Chart' setup interface. On the left, a sidebar lists 'Observation Setup', 'Pre-Lesson Questions', 'Seating Chart' (which is highlighted in blue), 'Student Demographics', 'Lesson Plan', 'Summative Forms', and 'Post-Lesson Questions'. The main area is a 6x4 grid of student numbers. Row 1: G3:10, G3:11, G4:13, G4:14. Row 2: G3:9, G3:12, G4:15, G4:16. Row 3: (empty). Row 4: G2:6, G2:7, G5:17, G5:18. Row 5: G2:5, G2:8, G5:19, G5:20. Row 6: (empty). Row 7: G1:2, G1:3, G6:21, G6:22. Row 8: G1:1, G1:4, G6:23, G6:24. At the bottom, there are four buttons: 'Student', 'Group', 'Teacher', and 'Observer'. A footer bar at the bottom right contains three buttons: 'Save and Return Home', 'Next Student Demographics', and 'Save and Start'.

Lesson 11.2: Practicing Setup for Groups in the Seating Chart

Groups in the Seating Chart - This lesson will ask the user to set up student numbers on a seating chart and then identify which students belong to specific groups.

Steps

1. Use *New Observation* to set up a lesson – in this case, use *Live Observation* since there is no specific video for such. For lesson topic type, *Lesson 11.3*
2. Set up the seating chart as follows with four groups of 4 students.
 - a. Reminder: Click on the *Student* icon, and it should turn blue. Then click on seats to identify where students are sitting.
3. Click on the *Group* icon, and then click on the students in the same group.
4. Click on the *Group* icon again, then click on the students in the next group and repeat until groups are identified.
5. If time permits, click on *Save and Start, Quantitative*, and view how the seating chart is displayed on the observation screen.
 - a. Note: If you wish to see how the group number is tagged to an S code, practice clicking on the *Group* button prior to clicking on a student seating chart number, then click on an S code and view the *Running Record* in the data analysis screen.

Lesson 11.3 Collecting Group-related Data - When listening to the teacher interacting with small groups and members or when examining how small group members interact with each other, the data collection is similar in sequence to when entering a student number prior to an S code. The user can choose to enter a group number (G5) prior to an S code (S5) to indicate the answer came from the group (G5-S5), or a student-to-student comment came from within that group (G5-S4), or a student in Group 2 asks the teacher a question (G2-S1).

Conversely, if examining student participation within a group, the user could code student numbers with S1-S5, and the seating chart heat map would show how much interaction occurred within that group.

Note: As shown in the image to the right, to designate that a specific interaction came from a specific group number, click on the *Group Bar* prior to clicking on any student within that group. Then click the specific desired S code.



Lesson 11.4 Data Analysis Using G Codes

After finishing with the lesson observation and proceeding to the analysis page, check out the *Seating Chart Heat Map* in association with *Student Engagement* to look at the data per student and the visual representations per seating chart.

Note: Small groups might easily generate more than five events per student. If the number of events per student is greater than five, the user can get a count of all the events for a particular S code by going to the *Group Summary*. The number of S code events is displayed here for each small group. For a more sophisticated analysis, use the .xls export function to create a statistical package - in progress.

What Can be Learned When Collecting Individual Student Interactions Within a Group? We know that in some small groups, one or two students often dominate the conversation. We also know that a lesson can be structured using roles so that most of the group members will be equally engaged and contribute to the lesson. Using the S codes embedded within a particular G number allows for an examination of such and a look at the specific within-group communication dynamics and engagement.

Significant features in the Quantitative Data Analysis for G codes (groups) and S codes (individuals) are:

In the *Group Summary* section:

- A table shows S code and M10 event responses coming from specific groups.

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

In the *Seating Chart Heat Map* quadrant:

- Seating chart heat map showing individual student responses or misbehaviors in the context of which group they were a member.

In the *Student Engagement* section:

- A table showing individual student engagement (S1-S5) and whole-class responses (S5-S9).
- A graph showing where in the lesson segment the actions occurred with vertical black bars for individual student responses (S1-S5) and vertical red bars for whole-class responses (S6-S9).

In the *Code Summary* section:

- A graph and table displaying a summary of the predominant use of the nine S codes which indicates the frequency of events and quantity of time associated with the specific S codes.

Questions to Ponder Regarding Group Engagement and Equity Among Group Members Data

- When the teacher approached the small groups and interacted with them, what was their intention? What did they want to accomplish by doing so versus observing the groups in action?
- What was noticed about the teacher's interactions with the small groups?
- How did the teacher's interactions foster the goals for the small group and the lesson? In what ways, if any, did the teacher's interactions lessen the intention of the lesson or weaken the intended purpose of having students work in small groups?
- Small groups are a great place to ask good questions and to foster student-to-student interactions – what did the observer notice regarding such? How might the teacher improve?
- How was the teacher's ability to pace themselves and get around to all small groups without taking too much time with one small group?
- We know the power of using cooperative learning strategies with small group structures (versus simply students in a group expected to work together). What might the teacher have done differently regarding small group strategies, and what impact do might it have on student engagement, thinking, and learning?

Lesson 11.6 Adding in T codes to M and S codes data collection for small groups.

Lesson 11.7 Collecting Data Using U Codes - User Identified Labels

Introduction – The following are short lessons that focus on learning about U Codes, which are codes that the observer can define depending on their specific need to document another type of action or event that is not defined by existing S, T, or M codes. This lesson is an information-only lesson, so it will only take a short amount of time to complete.



Types of U Codes - One of the U codes is an event-only code (U1), and one is an event/timing code (U2). Which U code is chosen depends on whether the user wants the action timed for how long it lasts. If the length of the event is essential, then the user should use the U2 code. If the user only wants to note that the event happened and mark when on the lesson clock it occurred, the U1 code will suffice.

Why Would the User Need to Use a U Code? Suggestions include:

- a. Since using “praise” is common and is not the same as T6 “acknowledging” or T7 “confirming,” then the user could use and click U1 to note the number of times praise was used and when (as U1 is an event and timing code) or instead use code U2 to include how much time was spent praising the student.
- b. The U2 code (event and timing code) can be used to note how much time was used to transition from one part of the lesson to another.

Note: Student numbers can be used in front of either U1 or U2 codes if the user feels it is important to tag the action to a specific student.

Lesson 11.8 U Code Data Analysis – There are a couple of places to find U code data in the quantitative analysis.

- *Running Record* – In *Data Buttons*, the user can click on U1 or U2 (the *Find* function) to locate U code data in the *Running Record* window.
- The *Code Summary* also has data on the count of U1 since it is an event-only code and the count and timing of U2.

Practice 11 – Small Group Actions Combined With Teacher Interactions

Level 12 – SMT Master Trainer Verification: T, S, M Codes, Seating Chart, Wait-time, Speed and Accuracy of Coding

Level 12 – SMT Master Trainer can only be achieved by passing a practical exam offered and proctored by SMT. Candidates will be given a video URL link at a specific time. Within a limited amount of time, they will be required to code the video using T, S, M codes, a seating chart, and the wait-time bar. Their data will have to be accurate and reliable to a certain degree before being considered passing. Also, using evidence-based analysis, their feedback, and recommendations provided to the teacher need to be substantive and utilize most or all the pertinent data. To achieve Level 12 certification, contact SMT for instructions.

At this certified level, the user can/has:

- Used the L, T, S, and M codes.
- Tagged M and S codes to student numbers and group numbers.
- Used a seating chart heat map with student demographics.
- Collected wait-time data.
- Captured data at the rate of normal classroom interaction.
- Captured data that falls within the boundaries of acceptable validity and reliability.
- Fluently discussed the data analysis screens.
- Used the evidence and analysis to provide high-quality feedback to the teacher.
- Collected data for use in a research study.
- Has completed an inter-rater reliability check, comparing the user's data to an expert user's data.
- Provided outstanding feedback and recommendations that are evidence-based.

The user will learn:

- Nothing new. The SMT Trainer candidate just completes a test to determine speed, the accuracy of coding, and level of understanding when examining the raw and analyzed data as incorporated into feedback and coaching

Steps – When the user feels ready to take a practical exam using SMT for observation, they first contact SMT to schedule an exam. Suppose the user performs within the boundaries of acceptable practice. In that case, SMT awards the user a certificate of SMT Master Trainer which means the user is SMT qualified to train others and consult for SMT.

Why does SMT offer a Level 12 – SMT Master Trainer Certification? There are three reasons:

1. Many people or companies offer program evaluation services to institutions that have received grants with intentions of providing effective professional development for teachers or designing and implementing a new curriculum purporting to effect positive change in classrooms or classroom activity. SMT can be used to collect rich data and indicators of the effect of funded activities on teachers and classrooms. Someone will want to know if the observer is collecting valid and reliable data and if they can use the data and analysis to provide evidence-based recommendations. SMT offers this Level 10 certification to validate the evaluator's claims of being able to collect valid and reliable data.

2. SMT will consider someone with a *Level 12 – SMT Master Trainer* certification to be suitable for becoming an *SMT Master Trainer*. *SMT Master Trainers* work with school districts or institutions to train and develop the observation skills of other teachers and administrators in schools or in higher education for faculty and pre-service teachers.

3. Teachers, administrators, teacher education faculty, future teachers, graduate students, education consultants, or program evaluators may want the highest level of training and SMT certification as they want or need to show professional levels of skill concerning evidence-based observation. For example:

- Teachers can bring their SMT observation to a conference with the administrator to demonstrate professional skills and strengths, and areas they are working to develop.
- Teacher candidates for NBCT can embed the data collected using SMT into their narrative of their teaching.
- Administrators can offer remediation plans to teachers based on data and evidence gathered from SMT.
- Teacher education faculty working with future teachers can document levels of growth for the student, their program, and for oversight agencies such as the Department of Public Instruction who looks for documented evidence of program effectiveness.
- Future teachers can use data collected with SMT as evidence when submitting their high stakes edTPA video and written analyses of their teaching or use in their end-of-program portfolio.
- Program evaluators or teaching improvement consultants can use SMT when providing their services.

Appendix A: Questions to Ponder Compilation

The following are the *Questions the Teacher Can Ponder* compiled from each of the training sections.

Questions to Ponder When Viewing the Code Summary Data - The *Code Summary* data provide general indicators of teacher tendencies, student actions, and misbehaviors and help to answer questions such as:

- What were the predominant T codes exhibited in this lesson?
- When looking at the data for the four question types (T3a, T3b, T4a, and T4), what is the tendency of the teacher to ask open-ended questions requiring students to think more deeply, speculate and construct answers vs. asking questions that need a yes/no or short-answer memory type response? If the goal was to dig into student thinking at a deep level, considering the type and number of questions asked, what might you conclude?
- What does the teacher tend to do following a student response? Do they tend to judge responses, acknowledge, and then clarify for a student, or instead ask a student to explain?
- Considering the type and number of questions asked, what might you conclude if the goal was to dig into student thinking at a deep level? What changes would foster more of this?
- What is the total % of T codes vs. % of S codes? (This is an indicator of whether the teacher is doing most of the talking and events or if the talking is balanced between the teacher and students, and at what level the students are contributing to the teacher-student or student-student interactions in that lesson.)

Questions to Ponder When Viewing L Code Data – Type of Lesson in Play

- After the bell rings and the class period begins, how much time did it take to start teaching?
- What might the teacher do differently to begin teaching at the start of the class period?
- How much time was spent on each segment of the lesson?
- If the teacher used more or less time on lesson segments than intended, why did that occur, and how did that affect the outcomes of the lesson?
- How much time did the transitions in-between each part of the lesson add up to?
- What might the teacher do to reduce the time needed for transitioning from one part of the lesson to another?
- How much time at the end of the lesson was not used for instruction?
- If the lesson ended early, what productive things could the teacher have done to utilize the remaining class time?
- Considering the whole class period, what might the teacher have done to use the time even a bit more productively?

Questions to Ponder When Viewing the M Code - Student Misbehavior Data

When Viewing the Code Summary:

- How many were classroom management events noted by the observer?
- How many of those classroom management events were not addressed by the teacher?

- Note that when the number of M10 events is added to the number of M12 events, if that number is greater than the number of M11 and M13 events, the teacher is probably ignoring some of the student misbehaviors either intentionally or due to the frustration of not having an impact when they do intervene.
- How much time did the teacher use to intervene in management events? (M11 and M13)

When Viewing the Seating Chart Heat Map:

- Where in the classroom are the problems occurring?
- Is there a small group or table of students who are exhibiting most of the misbehaviors?
- Are behavioral issues proximal or distant to where the teacher is located?

When Viewing the Management Summary:

- Where in the lesson, or during which lesson type, did the management issues occur? (Vertical bars on the lesson segment timeline)
- How many management issues occurred at the start of class, end of class, or during transitions from one lesson segment to another? (Vertical bars on the lesson segment timeline)

When Viewing the Video:

- How much time was needed to get all the students settled and begin the lesson when transitioning from one lesson segment to another?
- How was the teacher's movement around the classroom?
- How did the students behave or misbehave today as a whole, compared to other days in general?
- Regarding specific students who might tend to misbehave, how was their behavior today?
- Was there anything about this lesson that might have contributed to more or fewer management issues?

Questions to Ponder Using S Code – Student Engagement Data

When Viewing the Code Summary:

- Compare the quantity of each type of S code exhibited during the lesson.

When Viewing the Seating Chart Heat Map:

- The heat map provides a visual distribution of student contributions – how would the teacher summarize this data, and how do the contributions match the teacher's intentions and expectations?
- How many of the students responded to at least one question and how many students were not part of the conversation?
- Using the demographic toggles on the Seating Chart Heat Map, examine student engagement by demographics such as gender, minority, ELL, and Special Education – think about what the data suggests in terms of equity regarding student engagement. How might you increase equity regarding student engagement?

When Viewing Interaction Patterns:

- Think about your teaching, and how many of the students responded to each other at least once, and what you might change to produce more student-to-student interactions. (*Interaction Patterns S-S #*)

When Viewing Student Engagement:

- What is the average number of responses per student? How does that fit your student engagement goals, and how might that number be increased. [Total of S1-S5 plus (the total of S6-S9 x the number of students in the class) / number of students in class]
- During which part of the class or type of lesson segment were students engaged, as evidenced by vertical bars? Which parts of the lesson were absent of student contributions and engagement, and how could you alter your lesson to produce more student engagement?

Questions to Ponder About T Codes – Teacher Actions Data

When Viewing the Code Summary:

- What were the predominant T codes exhibited in this lesson?
- When looking at the data for the four question types (T3A, T3b, T4a, and T4) - what is the tendency of the teacher to ask open-ended questions requiring students to think more deeply, to speculate, and construct answers vs. asking questions that require a yes/no or short-answer memory type response?
- If the goal was to dig into student thinking at a deep level, considering the type and number of questions asked, what might the user conclude?
- Look at how many and what types of questions were asked. How did this affect the amount and type of student engagement?
- Looking at the T5-T12 counts, what can the user conclude about how the teacher responds following a student response if their goal was to encourage student responses and keep digging into what students were thinking?
- Look at how the teacher-initiated questions and then responded to student thinking - think about how the teacher's tendencies encouraged or discouraged student responses and engagement.
- When students respond – what does the teacher tend to do? Do they tend to judge responses, or acknowledge, and then clarify for the student, or instead ask the student to clarify?

When Looking at Interaction Patterns:

- Look for a 3-code pattern tendency, then a 4-code pattern tendency. How are the most common patterns consistent with the goals for the lesson? What are some changes to how the teacher interacts with students that would be more consistent with their intentions for the lesson?

Questions to Ponder About the Lesson After Collecting T, S, and M Codes

When Viewing the Code Summary:

- Examine the quantity of T, S, and M codes. Then consider any of the questions posed above in the sections looking at only T, only S, or only M codes.
- Look at and compare the percentage of T codes vs. S codes and conclude if this lesson was more teacher-centered or student-centered, or balanced regarding such. Then consider how this result met with the teacher's intentions or goals for the lesson. What was consistent or inconsistent with their intentions and the strategy you chose for this lesson?

When Viewing the Interaction Patterns:

- Examine the counts for S-S, T-S-T, and T-T. If the teacher wanted to achieve more S-S interactions, what does the data indicate?
- Examine the most predominant patterns of interaction with students. What types of questions are in the most predominant patterns? What types of teacher reactions to student responses are in the most predominant patterns? How does the type of questions and responses use fit with the teacher's goals for instruction, and what might the teacher modify to achieve questions or responses that are more consistent with their intentions?

When Viewing the Seating Chart Heat Map:

- Looking at the quantity of student engagement in the class, how is it distributed, and what would the heat map look like if you raised student engagement to an optimal level?

Looking at the *Teacher Actions Plus* screen:

- What question types were used in the lesson? What followed questions in terms of S codes – one student response or was it more than one student response? After, the student(s) responded what did the teacher tend to do next?
- How did the teacher use the whole group response engagement S codes (S6-S9) to engage all students in generating answers and providing maximum feedback to the teacher? If S6-S9 were not used, what evidence is there that the teacher attempted to increase student's oral contributions to the lesson?
- Knowing that T codes (teacher responses) T6, T11, T12, and sometimes T8 tend to help get and keep students thinking more so than T5, T7, T9 and T10, what does the visual tell you about the teachers use of the various response codes?
- What stands out about the student misbehavior actions M10 and M12, and then how would you characterize the teacher's reaction to student misbehaviors M11 and M13?
- How was the distribution of S codes and student contributions to the lesson?
- What was the mix of S codes? How many S1-S4 codes were present during the observation?

Questions to Ponder Regarding Group Engagement and Equity Among Group Members Data

- When the teacher approached the small groups and interacted with them, what was their intention? What did the teacher want to accomplish by doing so versus observing the groups in action?
- What did the user notice about the teacher's interactions with the small groups?
- How did the teacher's interactions foster the goals for the small group and the lesson? In what ways, if any, did the teacher's interactions lessen the intention of the lesson or weaken the intended purpose of having students work in small groups?
- Small groups are a great place to ask good questions and to foster student-to-student interactions – what did the user notice regarding such? How might the teacher improve?
- How was the teacher's ability to pace themselves and get around to all small groups without taking too much time with one small group?
- We know the power of using cooperative learning strategies with small group structures (versus simply students in a group expected to work together). What might the teacher have done differently regarding small group strategies, and what impact might it have on student engagement, thinking, and learning?

Questions to Ponder About the Wait-Time Data – Student and Teacher Think Time

- How does the WT1 average correspond to the teacher’s intention for using wait-time to give students ample opportunity to think about the teacher’s question?
- How does the WT2 average correspond to the teacher’s intention to use wait-time to give students ample time to think about a student’s response and respond to that student? (Look at the relationship between WT2 average and the S-S count in *Interaction Patterns*.)
- How does the average WT for question types differ regarding higher-level questions and needing more think-time to generate an answer?
- If the WT average is lower than expected or desired, what is the teacher’s concrete plan for increasing their WT?

Appendix B. Learning and Practicing the Teacher Action Codes

Learning How to Analyze Teacher-Student Interactions - The SATIC Coding System

There are different schemes for analyzing teaching. SATIC is a teacher behavior assessment scheme devised by Dorothy M. Schlitt and Michael Abraham (1972), modified by Clough (2006), and further modified by Berg (2020). SATIC is a system that helps uncover and identify the specific tendencies and patterns teachers use when interacting with their students. The value of SATIC is that it provides a system for observing teachers and a mechanism that provides a much better understanding of what teachers do or don't do while interacting with students. With this data in hand, teachers can reflect, observers can provide feedback, coaches can suggest changes. Teachers can make changes to interactions with students based on their goals for lessons, what the data indicates, and what educational research shows to be effective.

One cannot make accurate statements about teaching unless attention is focused on the particulars and specifics of teaching. Teachers who are proficient reflective practitioners summarize a teaching episode with specific comments regarding the many things teachers say or do during the course of a class period that contributes to the whole of "affective" or "not so affective" teaching. At the root of all these positive general statements are specific teacher interaction behaviors that facilitate rather than impede the positive learning outcome. How teachers interact with their students can turn a passive activity into a super engaging activity, turns a stilted discussion into a robust interchange, or elevate a risky, no-questions-asked environment into a classroom where creative thinking is allowed and encouraged.

Being able to talk in terms of discrete teacher behaviors provides the teacher and the observer with specifics to look for and feedback specifics to talk about when keying in on what was powerful within the lesson and what needs improvement. That is why being able to use a mechanism like SATIC is essential as it allows teachers to identify, examine, reflect, and converse about specific teacher behaviors that significantly affect the learning environment.

Overview of the SATIC Lessons

SATIC is about identifying and examining specific teacher interactions and then developing the skills to provide specific and thorough statements about a teacher's interactions with students in the classroom. To become proficient in using SATIC and thereby benefit from the process of using SATIC, the reader needs to develop fluency by first learning to walk and then run. So, this module starts you out by first learning the

discrete categories and examples of teacher actions, followed by practice sheets with keys to check the accuracy. By the end of this work, the reader should be able to accurately identify most teacher behaviors that occur during an interaction. However, keep in mind that no system is perfect; now and then, a teacher's behavior might not fall cleanly into one category or another. In that case, the best guess suffices if the reader consistently codes that teacher's behavior when it happens. Coding will count how many times it happened and when the teacher tends to use that behavior in relation to other teacher actions. With data in hand, the observer decides if that tendency or pattern is productive or not based on the goals for instruction during that teaching episode. Following practice with the written examples in this module, the reader will then return to the SMT training manual and proceed through the video-based part of the teacher actions (T codes) training.

Instructions For Learning SATIC

The categories found in the SATIC system are there because they were identified as prominent behaviors observed when teachers are interacting with students. SATIC has four groupings broken down into *Monitoring, Initiating and Responding, and Annoying*, with only a total of 14 discrete teacher actions that fall under those groupings. Each discrete teacher action is named and defined. The reader's goal is to develop a functional understanding of teacher actions so that they would be able to identify and make a note of the specific teacher actions being observed when observing a teacher.

Monitoring - The first grouping with only one action is a catch-all for when the teacher is monitoring or doing any of the many administrative tasks vs. actively teaching students.

Initiatory Teacher Actions - In the second grouping called *Initiatory Teacher Actions* is lecturing, giving directions, and four types of questions from low level to higher. Note that this scheme uses only four question types vs. other systems that have 5-8 categories which are way too many for a fast-paced observation.

Responding Teacher Actions - The third grouping labeled *Responding Teacher Actions* would include those teacher actions that follow a student asking or answering a question or making a comment. Later in the module, the reader will learn that the eight teacher actions within *Responding Teacher Actions* can be separated into "teacher-centered" versus "student-centered." In short, teacher-centered actions keep the teacher at the center of focus, while student-centered actions turn the focus back to the student (how these

are grouped into sub-categories will become obvious as you study them). Separating and keeping track of teacher-centered versus student-centered is essential, as emphasizing one versus the other during teacher-student interactions significantly impacts many aspects of classroom instruction.

Annoying – The last group is one category called Annoying Non-Verbals or Verbals and includes any teacher action that is noticeable and annoying to students or the observer and serves to distract the learner's focus on the lesson.

Now proceed to Sheet 4.1 and view the teacher action categories and examples provided.

Monitoring

0. Monitoring: This code is used when students are working, and the teacher is monitoring the classroom or perhaps doing administrative work, such as taking attendance.

Initiatory Teacher Actions

T1. Lectures or Presenting Information: This code is used when the teacher lectures or presents information in the form of extended teacher-initiated commentary.

T2. Gives Directions, Makes a Statement, or Asks a Rhetorical Question: This code is used when teacher-initiated statements such as directions, statements, comments, or a rhetorical question to which no answer is expected are used. Examples:

- a. Sort sets of directions
- b. Rhetorical Questions such as: Does that make sense? Are you ready to start?

Four Question Types

T3a. Asks Yes/No or Multiple-Choice Question: This code is used when the teacher asks a question that requires a yes/no answer. Examples:

- a. Can you explain photosynthesis?
- b. If I add a red filter over the light, will the paper turn green?
- c. Can you pick out the bird that doesn't fit with the others in the group?
- d. Is it going to weigh more?
- e. Is part of the microscope named the ocular or the stage?
- f. Is iron a nonmetal?
- g. Would that be a verb or a not?

T3b. Asks A Merely Recall Question: This code is used when the teacher asks a question that requires a 1-2-word answer. This also might be a memory-type response. Examples:

- a. When did they fight the war of 1812?
- b. To what species does man belong?
- c. What is the capital of North Dakota?
- d. Tell us what we did in yesterday's lab.

T4a. Asks Thought-provoking Question: This code is used when the teacher asks a question that requires deep thinking than a 3a or 3b, perhaps in the form of speculation, and might be answered with just 1-2 words but does not ask for justification or explanation for how they arrived at that response. Examples:

- a. Predict what you think will happen when I ...
- b. What might happen to the system when I raise the pressure?
- c. If we put a heavier load on the cart and let it roll downhill, what might be the effect on the speed of the cart? [Note – contrast this with example C shown under T4b to differentiate T4a from T4b]

T4b. Asks Thought-provoking with Justification Question: This code is used when the teacher asks a question that requires deeper thinking, much like a 4a but in addition also requires a justification for that answer. Examples:

- a. Given the results of the last two experiments, which of the two metals were in solution and how do you know?
- b. Look at the graph - what you would choose to make the cart go down the hill the fastest and explain why you would choose those things?
- c. "If we put a heavier load on the cart and let it roll downhill, what might be the effect on the speed of the cart, **and why do you think so?**

Responding Teacher Actions - Eight Things Teachers Might Do After Students Respond

T5. Reject Student Comment, Answer, or Question: This code is used when the teacher rejects a student's response in a negative manner, indicating that a student's answer is wrong or the teacher cuts off a student's response. Examples:

- a. No, try that one again.
- b. Wrong!
- c. Susie, could you help him out?

T6. Acknowledges Student Comment or Answer: This code is used when the teacher acknowledges the student without evaluation. For example, the teacher might give a neutral response indicating the student was heard but does not confirm or reject the student's answer.

Examples:

- a. O.K. [in a non-confirmatory sense]
- b. All right
- c. I see
- d. That's an interesting idea.

T7. Confirms Student Comment or Answer: This code is used when the teacher evaluates a student's response positively. For example, in the form of praise. Examples:

- a. That's right
- b. Good job!

T8. Repeats Student Comment: This code is used when the teacher repeats the student's response. This technique may be used to:

- a. To indicate that the student response was heard.
- b. To allow other students to hear the response.
- c. To enable the student to listen to what he or she said.

Examples:

Adam – I think it would go down the hill much faster when you add weight to the car.

Teacher – So you think it would go down faster with more weight added to the car.

T9. Clarifies or Interprets What Student Said: This code is used when the teacher re-words or interprets a student's response by adding more information or meaning on top of what the student said. This technique may be used to clarify, emphasize, or improve a student's answer. Example:

- a. The question was posed by the teacher, "Why did the rocket ship keep speeding up as it entered the atmosphere?" The student responds, "Gravity?" and then the teacher follows up and clarifies the

student's answer by saying, "Yes, gravity increases as you get closer to the earth, the rocket ship speeds up, and it will keep speeding up until it hits the earth."

b. The teacher asks – "What makes a good short story?" The student responds, "A plot." The teacher follows up with a clarification by adding meaning, such as "A short story has to have a good plot, meaning quickly developed characters, the brevity of language, a strong opening sentence or paragraph that grabs the reader's attention, and"

T10. Answers Student Question: This code is used for short, succinct responses to student questions.

- Note: Initially, it might look like the teacher is answering the question, but if the response becomes long-winded and extends beyond 15 seconds, the user should code a T10, then when the diatribe has ended, code a T1 to indicate that the teacher responded with a mini lecture in addition to responding to the student question.

T11. Asks A Student to Clarify or Elaborate: This code is used when the teacher asks a student to extend, repeat, or clarify a student's response. Examples:

- a. Tell me more about that idea.
- b. What do you mean by that?
- c. Please explain your idea.

T12. Uses Student Question or Idea: This code is used when the teacher redirects a student's question to another student or to the small group or whole class. Examples:

- a. John said that gravity was involved. What do you think about that idea?
- b. Shaneka gave two reasons why the community was upset about the new lawn chemical law. Turn to your partner and discuss whether you agree or disagree and why.

T13. Annoying Non-Verbals or Verbals: T13 is an event-only code used when noting something nonverbal in nature, such as an annoying habit that is worth noting and relaying to the teacher. Use this when the teacher displays annoying non-verbals or verbals that detract from instruction or perhaps distract students. There are many factors that influence whether students will participate in class and answer questions or get involved with class discussion, or alternatively inhibit their participation. Non-verbal behaviors can be inviting or non-inviting.

Inviting Behaviors

- arms open – palms open and arms spread apart like you are welcoming and inviting them and pulling questions into you
- smile – it is hard to make non-inviting facial expressions when you are smiling
- eyes wide so eyebrows are not scrunched together
- leaning forward

Non-Inviting Behaviors

- arms crossed
- eyebrows scrunched down or tightening the muscles around your mouth area
- turning your back to the students
- leaning backward, away from the students

Code As-Is and Without Interpretation

Note that when you view a teacher teaching and begin identifying specific teacher actions, code the statement or question as the teacher asks it, not how the student responded, nor what you think the teacher intended. For example, the teacher might ask, *“Do you think recycling is an important thing to do?”* Clearly code this as a T3a, a yes/no question. The student responds, *“Yes, because if we don’t recycle the world’s supply of ...”* a response that became a five-sentence answer. Although the student went on to supply a lengthy answer, clearly beyond the yes/no question asked of them, it is still coded as a T3a. Why is it important to code as is, without interpretation? Frequently, asking a T3a will produce a single word yes/no response, and then the teacher must follow up with a T11 requesting the student to tell them more to achieve their intentions of finding out what the student knows about the content. Whereas asking an open-ended question will often produce a student answer that offers insight into their thinking. So instead of asking a yes/no type of question, consider asking a T4a or T4b instead of asking two questions to get to the point you want.

With practice, the user will learn to recognize discrete teachers’ actions represented by code # and develop fluency and speed. In time you will be thinking about the number, or name, of the category as you see it occur; in your mind, you might be thinking, that’s a 1, 3a, 8, 3a, 6, 1, and so on. So, begin by studying the list of codes and the examples and then start working on the practice examples. There are only 14 defined teacher actions to learn. Use the definition sheet at first, but then attempt to wean oneself away from the definition sheet and try to remember the number and name of each category when reading or viewing. Learning and knowing the various discrete teacher actions and the code number greatly helps the SMT user when they begin observing and coding a lesson as less time will be spent on trying to decide which category the action best fits, and the user also knows where within the list from top to bottom the category/button resides, thereby a faster click. Next, the reader is provided some tips and mnemonics for remembering the T codes.

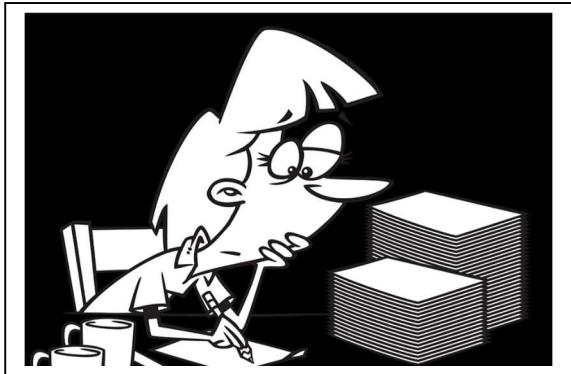
Tips Mnemonics for Learning the T Codes

The T codes are used to represent teacher actions. Observing and accurately describing the teacher’s role and actions as they are teaching is a critical aspect of providing feedback and coaching teachers toward improving instruction. Part of becoming a fluent SMT user is improving knowledge of the T codes and what individual codes represent to cut down on novice SMT user think time. Identifying a discrete behavior and then immediately knowing which code to click

leads to more accurate data and allows the user to keep up with the sometimes-fast pace of teaching. There are some mnemonics and tips that might be helpful when learning and using the codes.

Monitoring

T0 – Monitoring: 0 or zero is the code for a teacher who is not teaching but rather monitoring the class or doing administrative tasks. So, zero “teaching” is occurring, and therefore T0 is the code.

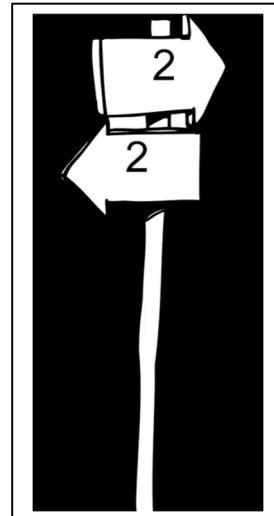


Initiatory Teacher Actions

T1 – Lecture: 1 is a number that is vertical, standing straight and tall, much like a teacher standing in the front of the room, talking and lecturing, so visualize the #1 as a teacher talking or lecturing.

T2 – Statement, giving directions, or a rhetorical question: A 2 is sort of like a question mark, and when students are confused about what to do, teachers clear up the confusion by giving directions. The teacher's action of giving directions is not linked to any other action. Anytime the teacher provides directions, it is a T2. The teacher making short statements consisting of a couple of sentences or asking rhetorical questions also falls under a T2.

Note that what might start out as a teacher statement sometimes extends into a lengthy, more lecture-like action, so to separate a T2 from a T1, consider that a T2 is roughly less than 15 seconds or less and when the teacher talks reach roughly 15 seconds a T2 code is entered, then after the rest of teacher talk ends a T1 is coded.



Only Four Question Types - While some teacher observation schemes employ a system of 7-8 types of questions, the system used with SMT has only four different types for the following reasons: a) in the midst of watching a teacher, the number of teacher and student actions is large, and the observer has very little time to determine question type – the four categories are minimal, yet they cover everything from simple yes/no questions to questions requiring deep thinking with justification. In short, this system works in that important data is collected, but the process and determining which question type is being exhibited is not overwhelming to the observer.

There are only two question types in each of the two groupings of 3's and 4's. T3-type questions are generally considered lower-level thinking questions than T4 questions. So, when observing and hearing a teacher pose a question, the observer's first thought should be to screen as to whether it is posed as a yes/no or short answer question, and if not, then move to the T4's and sort it out based on the examples and tips below.



T3a – Yes/No or Multiple-Choice Questions: The lowest level question on the scale of thinking is a question posed that only requires a yes/no response. Any question that begins with would you, could you, do you, will you, or are you, are automatically coded as a T3a. While a question posed as a yes/no question might require deeper thinking even to generate a yes or no response, the observer still codes it as a T3a because a yes/no question CAN quickly be answered without thought. Any student can answer this question by vocalizing a “yes” or a “no,” and unless teachers follow up, they cannot say for sure whether the student’s response was a guess or not. When using SMT, each question is coded as vocalized and not as the observer speculates about the teacher’s intentions. Yes/no questions are coded as such because a yes/no type of question can be improved and uncover more student thinking by asking a better question. Multiple-choice low level questions also fall into this category such as:

- Is iron a nonmetal or not?
- Would that be a verb?

T3b – Factual, Memory, Merely Recall Questions: Maybe a step up in difficulty from yes/no questions; this question is asking for information, probably a factual answer, something students should have learned and can recall. At least this question requires students to put some words together for a response, so T3b is asking a question that requires a short answer or a memorized, factual response. Short answer questions are one step up from a T3a, so remember that they are coded as a T3b.

Examples include:

- When did they fight the war of 1812?
- To what species does man belong?
- What is the capital of North Dakota?
- Tell us what we did in yesterday's lab.

T4a – Thought Provoking Questions: First, there is recognition by the observer that it is not a yes/no question and not a short answer or recall type question, so the user is considering whether it is a T4a or T4b. While both types of questions require deep thinking and ask students to generate a response to the question, with T4a, students are **NOT asked to explain the reasoning behind their answer nor justify their response**. A T4a might require students to speculate but no explain their thinking. Examples include:

- a. Predict what you think will happen when I ...
- b. What might happen to the system when I raise the pressure?

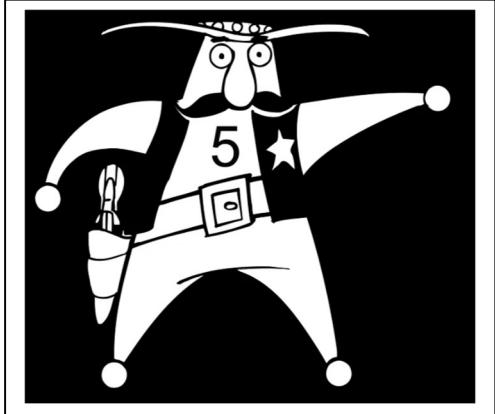
T4b – Questions Requiring Speculation and Justification: A question requiring deeper thinking, and students generate a response **and explain the reasoning behind their response or justify their response**.

- a. Given the results of the last two experiments - which of the two metals were in solution, **and** how do you know?
- b. Look at the graph - what you would choose to make the cart go down the hill the fastest **and** explain why you would want those things?

Responding Teacher Actions

The next seven behaviors are things teachers do AFTER getting a student response. To be clear, a teacher asks a question or makes a comment, a student responds, THEN the teacher does one or more of the following.

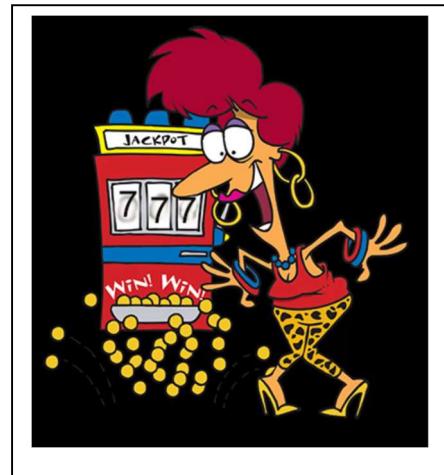
T5 – Judging Response Indicating Wrong: T5 is the teacher's action that codes to indicate that the student's response was wrong and that their answer was incorrect. To remember this, think of a 5-pointed lawman's star, and the lawman who is wearing the badge is present because something is wrong. Visualize a 5-pointed star and the word "wrong."



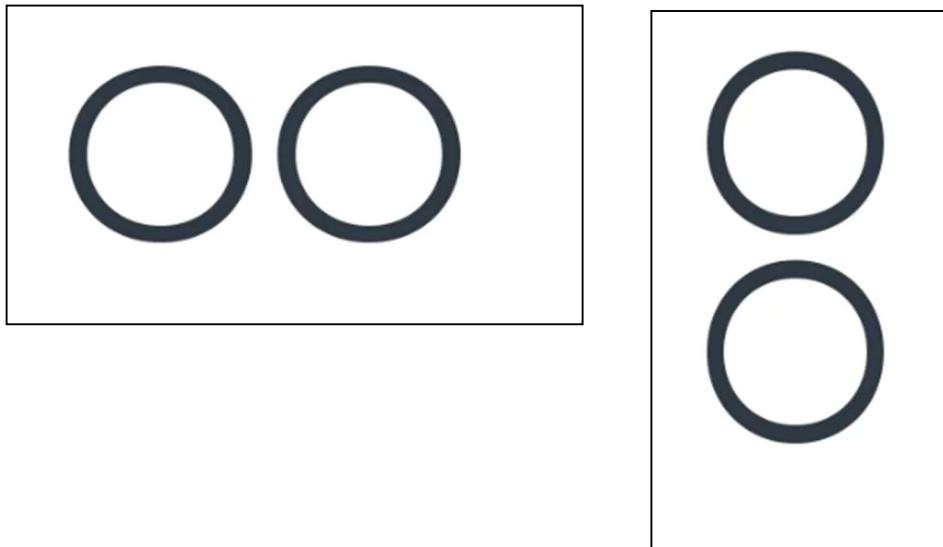
T6 – Acknowledging Response: 6 is sort of halfway between 1 and 12 on this scale, and something in the middle is neutral. T6 is when the teacher acknowledges but doesn't judge; they simply let the student know they heard the answer but didn't indicate to the student or the class whether the student's response was correct or incorrect. They give a neutral response, a non-confirmatory response; they acknowledge the student's answer in some manner.

- a. O.K. [in a non-confirmatory sense]
- b. All right
- c. I see
- d. That's an interesting idea.

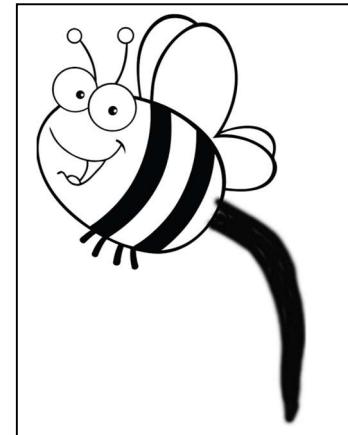
T7 – Judging Response Indicating Correct: 7 is supposedly a lucky number. Hitting the 7 wins the jackpot. 7 is when the teacher tells the student that their response was correct, on target, a win!



T8 – Repeating Student’s Response: A way to remember that the number 8 represents “repeating” is because it is made up of two stacked circles. The first circle is repeated and put together with the second circle forms an 8. An 8 is when the teacher repeats the student’s response.



T9 – Clarifying the Student’s Response: For T9, I think of a bee with its stinger pointed downward about to inject something. When teachers hear a student's response and then proceed to say a bit more about the topic that includes things the student did not say, in effect clarifying the student's response and adding meaning and information beyond what the student said, it is a T9. T9 is the teacher clarifying and adding meaning to the student's response.



T10 – Answering A Question: A 10 is a perfect score, and who in the class knows the most about the content – the teacher, so when a teacher answers a student’s question, it is a 10!



T11 – Asking the Student To Clarify: 11 is two one's side by side. When 1 (one) student gives a response, and the teacher asks that same student (1 again) to explain their answer or to clarify their answer, it is a 1 followed by another 1 or a T11. So, a T11 is asking the student to clarify their answer.

T12 – Using A Student's Idea with the Rest of the Class: When the first student (1) responds, and the teacher uses that response to initiate responses from the rest of the class (or to another student), they have now moved on to student 2. So, 1 followed by 2 = T12. A T12 uses a student's idea and bounces it out to the rest of the class in some manner.

T13 – Annoying non-verbals or verbals can be remembered by thinking of 13 as the unlucky number and something the teacher needs to avoid doing, as the action is not useful for instruction and perhaps a distraction for the students.

Teacher Actions and Behaviors	Sheet 4.2
<i>Monitoring</i>	
0. Monitoring or administrative tasks	
<i>Initiatory Teacher Actions - Talk</i>	
1. Lectures or gives directions	
2. Makes statement or asks rhetorical question	
<i>Four types of questions</i>	
3a yes/no or multiple-choice question	
3b. Merely recall question	
4a. thought-provoking short-answer question	
4b. Extended-answer question	
<i>Responding Teacher Actions – 8 things teachers do after students respond</i>	
5. Rejects student comment	
6. Acknowledges student comment	
7. Confirms student comment	
8. Repeats student comment	
9. Clarifies or interprets what student said	
10. Answers student question	
11. Asks student to clarify or elaborate	
12. Uses student question or idea	
<i>Annoying Behaviors</i>	
13. Annoying non-verbals or verbals	

Practicing Identifying Teacher Actions and T Codes Using Transcripts

Practice Sheets - There are numerous practice sheets for identifying teacher actions (T codes) for science, math, English, and social studies. If the reader is an elementary teacher, a teacher of students with special needs, or an ESL/Bilingual teacher, choose the practice sheets that best fit what you teach. These are listed below and located thereafter.

Choose the practice sheet that relates to the content you teach. Then have the one-page SATIC Code Summary (Sheet 4.2) of the T codes ready and start by writing a T code for each numbered blank. When finished check your answers with the key that also explains why that code is the best identifier. This practice will help the reader increase their accuracy when identifying an action that is associated with a T code. Note that a teacher's action might be interpreted slightly differently at times than another person would, but their explanation would justify how they coded the teacher's action. SMT recommends doing at least two practice sheets to develop skill and accuracy of coding T events.

Following this practice using paper and pencil mode the user should return to the training and proceed to practice collecting teacher actions using SMT. You will use SMT to watch video and practice identifying T codes by clicking the buttons. Note that at first, it is OK to pause the video when necessary, as your skill level may not match the pace of teaching. The goal is to develop your skill to keep up with the sometimes-fast pace of the video. As you continue in the SMT training you will learn how SMT analyzes and displays the data in various summaries such as Code Summary, Lesson Summary, Management Summary, Student Engagement Summary, Teacher Actions Plus, Interaction Patterns, and Small Group Summary. Teaching episodes contain a rich and robust set of data, so the SMT analyses provide the SMT user with an amazing array of indicators of teaching to draw from when reflecting on teaching, providing feedback, and coaching teachers to higher levels of effectiveness.

Optional Work and Extension of Knowledge of Teacher Actions

Note that an SMT Professional Development Module called Teacher Actions and Interactions has more extensive information to consider, more practice on identifying teacher behaviors, and important things to consider regarding matching teacher actions to goals for instruction.

What you have learned here within the SMT training covers everything up to Chapter 6 in the *Teacher Actions and Interactions Module*. These are the other chapters and components of that module.

- *Chapter 6 - More Practice Identifying T Codes Using the Mealworm Activity Transcript* contains a whole science lesson called Mealworms that has been transcribed and can be used for more practice identifying T codes. There is a key for this practice so the user can check their answers and perhaps further refine their identification of T codes. But what happens following the data collection? How can the data be analyzed and used? Chapter 6 also shows what one can do with the Mealworms data and how trends, tendencies, and patterns of instruction can be identified from the raw data.
- *Chapter 7 – Altering Interaction Behaviors in The Mealworm Activity – A Do-Over* examines how the teacher might have interacted with students to produce more student thinking and teach in a manner consistent with goals for an inquiry lesson. There are predictable teacher actions that mesh with inquiry teaching.
- Chapter 8 examines *Teacher-centered vs. Student-centered Teacher Actions* examines which teacher behaviors **tend** to keep the teacher at the center of the instruction (less student engagement and less understanding of what students think and know) vs. fostering student engagement and keeping the students at the center of instruction?
- *Chapter 9 - Wait-time and Non-Verbals: Teacher Actions With A Huge Effect on Learning and Student Engagement* focuses on the importance of using wait-time and non-verbals that foster student contributions and student engagement in lessons.
- *Chapter 10 - Identifying Your Own Patterns and Tendencies: What is your interaction fingerprint?* Stresses that everyone has habits and teachers have teaching habits and then asks you to predict how you tend to interact with students.

- *Chapter 11 - Matching Behavior to Goals for Students* examines how teacher actions and teacher-student interactions should match up with the goals for the lesson.
- *Chapter 12 – General Tips for Changing Teacher Behaviors* provide numerous tips and suggestions for posing questions and increasing student contributions, thinking, and engagement during a lesson.

Practice Sheets for Science, Mathematics, Social Studies, and English

Science Practice 1 – Observations Sheet 5.10

Science Practice 1 – Sheet 5.10 Observations KEY

Science Practice 2 – Reaction Experiment Sheet 5.11

Science Practice 2 – Sheet 5.11 Reaction Experiment KEY

Mathematics Practice 1 – Fractions Sheet 5.20

Mathematics Practice 1 – Sheet 5.20 Fractions Key

Mathematics Practice 2 – Domain and Range Sheet 5.21

Mathematics Practice 2 – Sheet 5.21 Domain and Range KEY

Mathematics Practice 3 – Graphing Polynomials Sheet 5.22

Mathematics Practice 3 – Sheet 5.22 Graphing Polynomials KEY

Mathematics Practice 4 – Solving for X Sheet 5.23

Mathematics Practice 4 – Sheet 5.23 Solving for X KEY

Social Studies Practice 1 – Stock Market and Great Depression Sheet 5.30

Social Studies Practice 1 – Sheet 5.30 Stock Market and Great Depression KEY

Social Studies Practice 2 – Middle Eastern Ethnicities Sheet 5.31

Social Studies Practice 2 – Sheet 5.31 Middle Eastern Ethnicities KEY

English Practice 1 – Using a Colon Sheet 5.40

English Practice 1 – Sheet 5.40 Using a Colon KEY

English Practice 2 – Learning About Assonance Sheet 5.41

English Practice 2 – Sheet 5.41 Learning About Assonance KEY

English Practice 3 – Learning About Consonance Sheet 5.42

English Practice 3 – Sheet 5.41 Learning About Consonance KEY

English Practice 4 – Learning About Parallelism Sheet 5.43

English Practice 4 – Sheet 5.43 Learning About Parallelism KEY

Teacher: John, you know you're not supposed to talk out of turn in my classroom, right?

1. _____

John: What? Who do you think you are to tell me what to do?

Teacher: I am your teacher.

2. _____

Teacher: Ok. Now that we have settled that little matter, we are ready to begin.

3. _____

Teacher: As you know, we are beginning the unit today with blah, blah, blah, (18 seconds on my watch).

4. _____

Teacher: What procedure did we use in yesterday's lab?

5. _____

Sara: We put the stuff in the liquid and got a reaction.

Teacher: Explain to us what you mean by the reaction.

6. _____

Sara: Well, it fizzed a small amount.

Teacher: When you say it fizzed, what did you observe?

7. _____

Sara: Little bubbles came up to the surface of the liquid, so I thought it was a reaction.

Teacher: Jose, you were working with Sara. She saw little bubbles and thought that was evidence of a reaction. Do you agree or disagree with her, and why?

8. _____

Jose: I agree because it created a gas.

Teacher: Fred – Jose suggested that it was a reaction because it created a gas – what do you think?

9. _____

Fred: I think the bubbles were carbon monoxide.

Teacher: Good grief. Where did you get an idea like that?

10. _____

Fred: What kind of a response is that? Don't you know that using judgmental responses negatively influences my creativity and dissuades me from further responses?

Teacher: No, I didn't.

11. _____

Teacher: Hey, Julie - what might the little bubbles be made of?

12. _____

- Julie: Well, I think it is just carbon dioxide since it is a carbonated drink.
- Teacher: That's an interesting idea. 13. _____
- Teacher: Jim, could you explain the chemical reaction that produces the bubbles? 14. _____
- Jim: No
- Teacher: Well, Jim, if you had to make a guess as to how the chemicals might combine to produce the bubbles, what might your best guess be? 15. _____
- Jim: Since you put it that way and lowered the risk factor, I now feel like I can venture a guess. I think that blah, blah, blah, blah, blah.
- Teacher: I see. 16. _____
- Teacher: That is the silliest thing I have heard in my 45 years as a teacher. 17. _____
- Jim: So much for taking risks down the road.
- Teacher: Susan, you heard what Jim said. How do your thoughts about the chemical reaction compare to Jim's? 18. _____
- Susan. I don't know. Maybe a reaction.
- Teacher. So, you think that the chemicals combine because the sodium and the Iodine simply switch places due to the oxidation numbers and polarity of the molecules? 19. _____
- Susan: Yes.
- Teacher: You are right on target! 20. _____

Science Practice 1 – Sheet 5.10 Observations KEY

<i>Example</i>	<i>SATIC Coding</i>	<i>Reason</i>
1.	2	Rhetorical comment not expecting an answer
2.	10	Answers the student's question
3.	2	Making a statement – short teacher talk less than 15 secs
4.	1	Teacher lecture – longer than 15 secs
5.	3b	Only asking students to recall – takes a short answer
6.	11	Is asking the student to clarify their use of reaction
7.	11	Continues by asking the student to tell them more and clarify
8.	12	Takes what Clara said and asks other students to react
9.	12	12 because the teacher is still working off of Clara's answer and asking Fred what he thought - to speculate about what the bubbles were made of – this often requires higher-level thinking.
10.	5	Clearly rejecting the student's answer
11.	10	Answering the student's question
12.	4a	The teacher had an interaction with Fred about something else, now s/he is sort of starting over and asking Julie to speculate so it might be a 4 if worded differently (such as “and why do you think so?”), but is probably a 4a since it can be answered with a one-two word answer.
13.	6	A non-judgmental way of responding
14.	3a	Worded as a yes/no question – remember we code the question as to how it was worded – not as to what we think the teacher intended on asking
15.	4a, 4b	Has reworded the question, asked the student to speculate and has turned the question into an open-ended question requiring more than a yes/no or short answer response
16.	6	A non-judgmental way of responding
17.	5	Clearly, a put down and rejecting the student answer
18.	12	Using Jim's answer and asking Susan to compare
19.	9	S/he is taking Susan's response and clarifying or interpreting the answer – in this case, the teacher is adding in way more than Susan ever said.
20.	7	Confirms what Susan said

Science Practice 2 – Reaction Experiment**Sheet 5.11**

- Teacher: Class, you are ready to begin, right? 1. _____
- Teacher: Let's get started. 2. _____
- Teacher: Good morning class. Today we are studying the topic you have been reading about for three weeks. You know all the vocabulary words. I believe there were 112 new words from yesterday. Since you understand the terminology, we are ready to do an experiment. So today we are focusing on...
(introduction continues for another minute) 3. _____
- Teacher: Now, looking at page 145, what do we do first? 4. _____
- Student: We put in the carbonated super fizzy stuff.
- Teacher: Right! Good job, Adam. 5. _____
- Teacher: What do you think might happen if we put in too much fizzy stuff? 6. _____
- Student: I think it might not fizz.
- Teacher: Are you saying that too much carbonation might cause a reverse reaction? 7. _____
- Student: Yes.
- Teacher: Well, you're not quite right. 8. _____
- Teacher: What really happens is that too much carbonation produces a basic solution, and the reaction stops. 9. _____
- Teacher: Students, what might happen if we add acid to this solution, and why do you think so? 10. _____
- Student: The reaction would stop.
- Teacher: I see. 11. _____
- Teacher: So, you said the reaction would stop? 12. _____
- Student: Duh, that's what I said.
- Teacher: So, I would like to know more – would you tell me why the fizzing might stop? 13. _____
- Student: No.

- Teacher: Who in class has an idea why the fizzing might stop? 14. _____
- Teacher: Ok. Well, if the fizzing stops, that means the carbonation has run out, and the acid added to the water cancels out the life cycle of the carbonation. This is a process ... (More than 15 seconds) 15. _____
- Teacher: Are there any questions? 16. _____
- Student: Yea, what is a life cycle.
- Teacher: That's not important. Let's move on. 17. _____
- Teacher: What factors might affect the results of today's experiment? 18. _____
- Student: Light and heat.
- Teacher: Interesting that you picked those two things, Sally. Jose, Sally thought light and heat might affect the experiment – do you agree with her, and how do you think those two factors might affect the experiment. 19. _____
- Student: Well, the light might cancel out the exothermic reaction since the mitochondria are light-sensitive. But heat probably wouldn't affect this at all.
- Teacher: Joe. Both Sally and Jose think light might affect this experiment. What do you think? 20. _____
- Student: I think that both Sally and Jose are dreaming.
- Teacher: Could you tell me more about why you think they are dreaming? 21. _____
- Student: blah, blah, blah, blah
- Teacher: Well, you're all wrong. 22. _____

Science Practice 2 – Sheet 5.11 Reaction Experiment KEY

<i>Example</i>	<i>SATIC Coding</i>	<i>Reason</i>
1.	2	Rhetorical – not expecting a response
2.	2	A short statement
3.	1	Teacher talk – 15 seconds or more
4.	3b	Asking a question that requires looking at the book and just repeating directions
5.	7	Confirming and praising Adam's answer
6.	4a	Asking students to speculate – “what do you think might happen?”
7.	9 or 3a	Careful here – probably a T9 because the teacher is interpreting what the student said and adding more on to the word “fizz” – it would really be a solid 9 if the teacher had stated in response to the student “yes, too much carbonation might cause a reverse reaction.” But it is posed as a question so it sort of sounds like the teacher is asking the student to clarify, but the teacher is adding in all the extra meaning way beyond anything the student said, so I wouldn’t code it as an 11. It would be an 11 if the teacher said, “Tell me more about why you think it wouldn’t fizz.” It also sounds like it is a T3a because they asked a yes/no question, but this is really linked to the prior couple sentences, so it is not an initiating code, but a response code.
8.	5	Rejecting the student’s answer
9.	2	The teacher has reverted to just making a statement and answering their own question
10.	4b	Asking the students to speculate about what might happen
11.	6	Acknowledging the student’s response without judgment
12.	8	Repeating the student’s answer
13.	11	The teacher is asking the student to clarify. Even though they followed up in a yes/no question manner, the teacher was asking the student to explain their answer. The teacher also could have asked, “Take a guess as to why the fizzing might stop” and it would be coded as an 11.
14.	12	The teacher is using the student’s idea (the fizzing might stop) and asking others to comment. You might have coded this as a 3b since all students have to do is say “I do” to this question.
15.	1	Teacher reverts to lecture
16.	3a	A yes/no question that hardly ever gets student responses – instead could ask, “What questions do you have ...”
17.	5	Clearly rejecting a student’s question
18.	4a	Asking students to speculate
19.	12	Using Sally’s ideas and asking another student to compare his idea with hers
20.	12	Asking still another student to compare his idea with theirs
21.	11	Asking Joe to clarify his response
22	5	Rejecting Joe’s answer

- Teacher: Ok. Today we are working with fractions. 1. _____
- Teacher: How many of you know what a fraction is? 2. _____
- Students: (a few hands were raised)
- Teacher: Ok. It is very important to understand how to use fractions. 3. _____
- Teacher: Let's take the first example. If we take $\frac{2}{8}$ ths of a whole pie, would you have more or less than half of a pie? 4. _____
- Teacher: Jesse? 5. _____
- Jesse: I think it is more than half.
- Teacher: Nope. Sorry. 6. _____
- Teacher: Andrea? 7. _____
- Andrea: I think it is less than half.
- Teacher: You are correct. 8. _____
- Teacher: Ok, the next example – how about $\frac{4}{7}$ ths? More than or less than half? 9. _____
- Becca: More than!!
- Teacher: Right! But, do you know that, or are you guessing? 10. _____
- Becca: I know that!
- Teacher: Now tell me how you know that for sure. 11. _____
- Becca: Ok. So, $7 - 4$ is 3, so 4 is bigger than 3.
- Teacher: Ok. Let me clarify. You see, the 7 on the denominator is the number of parts, and the 4 means 4 out of 7 parts, so 3.5 parts would be half. Therefore 4 is more than half. 12. _____
- Teacher: You'll see what I mean, right? 13. _____
- Teacher: Ok. Next example. How about $\frac{5}{11}$ ths – is that more than half? 14. _____
- Katie: Yes.
- Teacher: Nope. John, could you help her out? 15. _____

- John: Well, I thought it was more too!
- Teacher: Goodness sakes alive children! 16. _____
- Teacher: Jose. Tells us what you think. 17. _____
- Jose: Well, if you calculate the numbers, it is less than half.
- Teacher: Jose, tell us more about what you mean? 18. _____
- Jose: Well, one of 11 is 5.5 and 5 is less than 5.5, so the fraction is less than half.
- Teacher: Dominique, what do you think about Jose's answer? 19. _____
- Dominique: He is right!
- Teacher: What makes you think he is right? 20. _____
- Dominique: His math is correct.
- Teacher: You are correct – great job!! 21. _____
- Teacher: Now, come up with an example in the form of a story that uses fractions and has something to do with your daily life. 22. _____

Mathematics Practice 1 – Sheet 5.20 Fractions Key

<i>Example</i>	<i>SATIC Coding</i>	<i>Reason</i>
1.	2	Teacher statement – shorter than 15 seconds
2.	3a	Yes/No question – asks for a raised hand – like a yes/no
3.	6 & 2	Acknowledges then makes a statement
4.	3a	Multiple choice question – answer is “more” or “less.”
5.	3a	By calling on a student, she is just repeating the short question asked in #4
6.	5	Tells the student they are wrong
7.	3a	By calling on a student, she is just repeating the short question asked in #4
8.	7	Confirms that the student is correct
9.	3a	Another multiple-choice question - answer is “more” or “less.”
10.	7 & 3a	Confirms first then asks a multiple choice question – answer is “I know that” or “just guessing.”
11.	11	Asks the student to clarify and tell her more
12.	6 & 9	Acknowledges in a neutral way, then clarifies and adds on more information to the student's response
13.	2	Rhetorical question
14.	6 & 3a	Acknowledges in a neutral way, then asks a yes/no question
15.	5 & 3a	Rejects the student's response, then asks a yes/no question
16.	5	Indicates the students are wrong by making an exasperated statement
17.	3a	Continues to follow up with the multiple-choice question posed earlier
18.	11	Asks the student to explain more about their answer
19.	12	Asks another student to react to what Jose said
20.	11	Asks her to explain more about why she thinks Jose is right
21.	7	Confirms that the student is correct
22.	4	Asks students to create a story and use what they know by connecting it to their daily life – clearly not a 3a or 3b, and does more than asks students to speculate

- Teacher: Welcome to class everyone, today we will be discussing... blah blah blah (clearly for longer than 15 seconds). 1. _____
- Teacher: Tom could you explain to the class what we did yesterday for those that were not here? 2. _____
- Tom: Absolutely not
- Teacher: Okay 3. _____
- Teacher: If you could give your best guess as to what yesterday's class was about, what would you say? 4. _____
- Tom: You talked about the domain and range of functions.
- Teacher: Exactly, good job Tom! 5. _____
- Teacher: Susan, out of domain and range which one can you describe the best? 6. _____
- Susan: Domain.
- Teacher: Okay, we can work with that. What is your definition of domain? 7. _____
- Susan: The domain of a function is a bunch of numbers.
- Teacher: Fred – how does your definition of the domain of the function compare to Susan's. 8. _____
- Fred: Well, I think that its more than just a bunch of numbers in that it is the numbers that are the outputs of the function.
- Teacher: That is incorrect Fred. 9. _____
- Teacher: The domain is the set of inputs within a function. 10. _____
- Teacher: Sally, what is it that Fred described to me? 11. _____
- Sally: Fred described the Range of a function.
- Teacher: Class did you hear Sally say that Fred described the range of a function and not the domain? 12. _____

- Teacher: Is Sally correct in her analysis of Fred's description? 13. _____
- Class: Yes!
- John: How do we know if a number is not in the domain or range?
- Teacher: Well, if the function can never give us a particular output, like in the function x "squared" we will never get a negative output, so the range is only positive numbers. For the domain, the output does not exist for the given input. So if we had a fraction, like 1 over x , 0 could not be an input because the output would be 1 divided by 0 which is undefined. 14. _____
- Teacher: And this brings us to where we are going today, how to determine the domain and range of a function. 15. _____
- Teacher: Do you think that -2 is in the range of the line given by the function $f(x) = 3x-2$? 16. _____
- Jennifer: I think so.
- Teacher: Why did you come up with that idea of -2 being in the range of this line? 17. _____
- Jennifer: When I plug in 0 for x we get an output of -2, so -2 must be a part of the outputs of this function.
- Teacher: Exactly, if we want to see if something is in the output, we need to find an input that gives us the output we are looking for. This can give us an equation such as $-2=3x-2$, in which we would solve for x . (Length of the statement was 23 seconds) 18. _____
- Teacher: If the profit that I made from selling shirts was given by the function $f(s)=4s-64$, where s is the number of shirts that I sell, how many do I need to sell to make \$16 of profit? 19. _____
- Tom: I think you need to sell 20 shirts.
- Teacher: Explain how you got to that answer Tom. 20. _____

Tom: I added 64 to both sides of the equation, $16=4s-64$,
and then divided both sides by 4 to get $s=20$.

Teacher: Very good Tom, you're right on the money.

21. _____

Mathematics Practice 2 – Sheet 5.21 Domain and Range KEY

<i>Example</i>	<i>SATIC Coding</i>	<i>Reason</i>
1.	1	Teacher is explaining the topic and presenting information for the day.
2.	3b	This is a short answer question recalling information.
3.	6	“Okay” is an acknowledgement, not an affirmation or rejection.
4.	4a	Similar to the earlier question, except that now the teacher is asking Tom to make an educated guess, which requires more thought.
5.	7	Affirmation of student answer.
6.	3a	Answer is a choice between two options, making this a multiple-choice question.
7.	3b	Answer is a recalled definition, making this a short answer question.
8.	12	The teacher is asking another student to compare their answer with Susan’s, using her thoughts as a springboard for the next question.
9.	5	Rejection of student answer.
10.	2	This is a short statement meant to correct the incorrect answer.
11.	3b	This is a short answer question requiring recall of a vocabulary word and its definition.
12.	8	Teacher repeats what Sally answered.
13.	3a	This is a chorus yes/no question for the class.
14.	10	John asked a question before this, so it is an answer to his question.
15.	2	Teacher gives a short statement to describe what they are going to complete in class today.
16.	3a	This is a yes/no question.
17.	11	While the teacher is asking Jennifer an extended thinking question (Code 4b), the teacher is asking her to elaborate on why she responded the way she did, making this an elaboration/clarification code.
18.	1	Teacher spoke for >15-20 seconds, presenting information to assist in clarification of what the student said.
19.	4a	This is a short answer question because it requires a simple answer, however, it requires extended thought to complete the math problem.
20.	11	Teacher is requesting that Tom further explain his ideas as to how he got to his answer.
21.	7	Affirmation of student answer.

- Teacher: Good afternoon, everyone. I hope everyone is having a great day. Today we will be continuing to discuss how to graphs of second-degree polynomials and then how to factor these polynomials. 1. _____
- Teacher: Is everyone ready to begin? 2. _____
- Teacher: Alright then. Let's begin today's lesson. 3. _____
- Teacher: So, what exactly is a second-degree polynomial? 4. _____
- Bryan: Isn't it a quadratic equation?
- Teacher: It is indeed a quadratic equation. 5. _____
- Teacher: But what does the equation look like when it is graphed? Maddie? 6. _____
- Maddie: Is it a Parabola?
- Teacher: Alright. That's a good guess. 7. _____
- Teacher: Anyone else have a different answer? 8. _____
- Silence*
- Teacher: Maddie is correct. 9. _____
- Teacher: It is indeed a parabola and the equation for that is $y = ax^2 + bx + c$ and the line will be a parabola. 10. _____
- Tyler: What exactly does a parabola look like?
- Teacher: Can someone in the class answer the question for Tyler? 11. _____
- Sidney: Isn't a graph a parabola when a line looks like a sideways "S"?
- Teacher: Not exactly. 12. _____
- Teacher: Can Anyone else help Tyler out? 13. _____
- Amanda: What was the question again?
- Teacher: What does a parabola look like? 14. _____

- Amanda: A parabola looks like a U.
- Teacher: Why do you think that, Amanda? 15. _____
- Amanda: The reason I think it looks like a U is because the line should be symmetrical since the polynomial is squared.
- Teacher: That is a correct. Thank you, Amanda. 16. _____
- Teacher: A graph is a sideways "S" shape when the equation is a 3rd degree polynomial, for people who were wondering where Sidney was coming from. 17. _____
- Teacher: What do you guys think would happen if the polynomial would be negative? 18. _____
- Keenan: It will flip over the X axis and look like an upside down "u".
- Teacher: Excellent job! 19. _____
- Teacher: Now that we understand what the graphs of these polynomials are, we can now factor these same polynomials..... 20. _____

Mathematics Practice 3 – Sheet 5.22 Graphing Polynomials KEY

<i>Example</i>	<i>SATIC Coding</i>	<i>Reason</i>
1.	1	It does not specific the length of the statement, however, it is a presentation of the information that will be covered today.
2.	2	This is a rhetorical question, as the teacher is not expecting responses and moves on regardless.
3.	2	Makes a statement to begin the lesson.
4.	3b	Teacher asks a short answer question requiring definition recall.
5.	8 or 10	This can be interpreted as an answer to the student question (T10) or it can be considered a repetition of the student's question in a statement (T8).
6.	3b	Teacher asks a short answer question requiring image recall.
7.	6	This is an acknowledgement of the student answer without confirming.
8.	3b	Teacher asks the same short answer question requiring image recall, opening to the rest of the class. It does not use Maddie's idea, so it is not a T12.
9.	7	Teacher confirms student answer.
10.	9	Teacher expands on the correct answer to fully explain the concept to the rest of the class.
11.	12	A student asked a question and instead of answering it, the teacher opens the question to the rest of the class, using Tyler's idea for more discussion.
12.	5	Teacher rejects the student's answer.
13.	3b	Teacher asks the same short answer question, opening to the rest of the class. It does not use Sidney's answer, so it is not a T12.
14.	10	While this is a question, this was said as a direct answer to a student question.
15.	4b	Teacher is asking Amanda to why she believes something, making this a though-provoking long-answer question.
16.	7	Teacher confirms student response.
17.	2	Teacher makes a statement to explain an earlier incorrect answer.
18.	4a	Teacher asks a short thought-provoking question, making students conceptualize a graph.
19.	7	Teacher confirms student response.
20.	1	Teacher begins presenting information/lecturing for the remainder of the class.

- Teacher: Good Morning class! Today we are going to be learning about solving equations for X, we do this to solve for the variable of an equation, we will use this when working with graphs and solving equations throughout multiple chapters this year. 1. _____
- Teacher: All right class, are we ready to get started? 2. _____
- Teacher: Okay, let's begin. 3. _____
- Teacher: Has anybody seen these types of equations before?
(Example on the board: Solve $x - 18 = -5$) 4. _____
- Steve: Yes! 5. _____
- Teacher: Okay Steve, how would you go about starting to solve this problem? 6. _____
- Steve: I think that you start with adding 18 to the right side and then I'm not sure. 7. _____
- Teacher: That's very good Steve! 8. _____
- Teacher: When we add 18 to the right side of the equation, we get 13 and that is then equal to X, which solves the problem. 9. _____
- Teacher: Do you want to go over more of these simpler examples? 10. _____
- Anna: Yes, please! 11. _____
- Teacher: Sounds good! 12. _____
- Teacher: How would we want to start this problem $4x + 13 - 9 = 24$? 13. _____
- Leslie: You start by solving $13 - 9$ which equals 4, and then you subtract that from the right side of the equation. 14. _____
- Teacher: Yes Leslie! That's correct. 15. _____
- Teacher: Can somebody else tell me the next step that we would take? 16. _____

George: I think it's solved then $4x$ is equal to 20, right?

Teacher: Nope! Want to try again? 13. _____

George: Maybe you divide 20 by 4 to get x by itself?

Teacher: Yes! That's correct George! 14. _____

Mathematics Practice 4 – Solving for X KEY

<i>Example</i>	<i>SATIC Coding</i>	<i>Reason</i>
1.	1	Teacher is presenting information to the class to begin the lesson.
2.	2	Teacher asks a rhetorical question; they are going to continue regardless of the answer.
3.	2	Teacher makes a short statement, directing the conversation.
4.	3a	Teacher asks a yes/no question.
5.	4b	Teacher asks an extended answer question requiring the student to explain the thought process behind solving a problem.
6.	7	Teacher affirms student response.
7.	9	Here the teacher does use the students answer (T12) but does not frame a new idea. Instead, they elaborate further on the student answer, making this a T9.
8.	3a	Teacher asks a yes/no question.
9.	2	Teacher makes a short statement.
10.	4a	Teacher asks students to think about how they would go about solving the problem and give the first step.
11.	7	Teacher confirms student response.
12.	4a	Technically, this is a yes/no question, making it literally a T3a, however, in the context of the dialogue, this is a repetition of the earlier solving problem, requiring students to think and provide the next step of the problem (T4a).
13.	5	Teacher rejects student response.
14.	7	Teacher confirms student response.

- Susan: Hey Teach! The stock market dropped three hundred points today. It crashed! We're going into another Great Depression! Did you hear?
- Teacher: Yes, I heard, but no I don't think we are going into another "Depression." 1. _____
- Susan: Yeah, man! Three hundred points! Go to the bank and get all your money, now!
- Teacher: Are you seriously worried? 2. _____
- Susan: I don't know why you're not freaking out! There could be millions of jobless people because of this, even worse than the Great Recession that our Great Grand Parents lived through.
- Teacher: OK, let's start right there. During this recent Great Recession, the unemployment rate was usually right around ten percent. So, one out of every ten people that wanted a job didn't have a job. 3. _____
- Teacher: Any guess for the Great Depression unemployment? 4. _____
- Kyra: Wow, ten percent doesn't sound all that bad, but I've heard that this was basically the end of the world. Great Depression unemployment, (*thoughtful pause*) twenty percent?
- Teacher: Actually, yeah, you're pretty close. 5. _____
- Teacher: During the Great Depression unemployment hovered around twenty percent, with a maximum of around thirty percent, but most likely neither the thirty percent, nor our more recent ten percent, counts the millions of millions of people that gave up trying to get jobs. 6. _____
- Humberto: Wow, so that means that at least one out of every four people that wanted a job didn't have a job. Was that one a lot more serious than this recent one?
- Teacher: Eh, depends on who you are, I guess. 7. _____

- Teacher: Anyway, that was one of the other causes of why the Great Depression went on for 12 years. If people can't work, they can't buy things. 8. _____
- Teacher: And if people can't buy things what else might happen? 9. _____
- Amy: Then companies can't make money and give people jobs.
- Teacher: Exactly. 10. _____
- Teacher: Companies can't make money and give people jobs. 11. _____
- Teacher: It was kind of a never-ending cycle of unemployment. There was another cycle that some people might point to as a cause of the Great Depression, or at least why some people may have expected a depression at that time. 12. _____
- Humberto: Wait! Another cycle? So, you mean some people could have predicted the Great Depression, and even the Great Recession.
- Teacher: Yep. 13. _____
- Teacher: In fact, students take out your notebooks and write some things down. 14. _____
- Teacher: In fact, some people did predict the Great Recession. It's called the Business Cycle or Economic Cycle. Sometimes businesses are making money because people are buying things, sometimes they are losing money because people can't buy things. 15. _____
- Teacher: Have you heard of this? 16. _____
- Zach: Oh yeah, I've heard of this. They're not always called depressions or recessions either. Sometimes they're called panics or crises.
- Teacher: You know it. It's kind of like the saying, "What goes up must come down." 17. _____
- Zach: And right before the Depression and Recession everything was up; people were buying things and businesses were making money. So, we have the

- Business Cycle as a long-term cause and
unemployment as a short-term cause.
- Teacher: What might be some other causes of the Great Depression and explain how you think those things caused it? 18. _____
- Susan: Maybe people overspending and using their credit card? I mean racking up debt that they couldn't afford to pay back. You know my cousin's parents just bought an eight thousand dollar living room set. So were credit cards a cause of the Great Depression?! 19. _____
- Teacher: Ok, write this down too. 20. _____
- Teacher: People would buy things without having the money to pay for them right away. Instead, the company would pay for it for the person by using credit. So, if the company suddenly decided they wanted their money ... 21. _____
- Teacher: What do you suppose would happen then? 22. _____
- Amy: Then the person would have to pay it right away?
- Teacher: If the company gave out too much credit, and then couldn't get people, potentially unemployed people, to give them the money for their stuff, then what do you suppose would happen? 23. _____
- Joey: The company would go broke?
- Teacher: Interesting answer. 24. _____
- Teacher: Ok. Someone else – how does your answer compare with Joey's guess? 25. _____
- Fred: Well, I'm not sure the company would go broke.
- Teacher: I would like to know more about why you think the company wouldn't go broke. 26. _____
- Fred: Well wouldn't all functioning companies have a bunch of cash in the bank?
- Teacher: That's some fairy tale idea about companies you have Fred. Nope, not at all. 27. _____

- Teacher: And this didn't just happen with individuals, it happened with countries. America loaned out billions of dollars to countries for World War One. 28. _____
- Zach: So, let me guess. Then other countries owed us money and couldn't pay us back.
- Teacher: They owed us money and couldn't pay us back. 29. _____
- Teacher: That is correct. That is exactly what happened. 30. _____
- Susan: So, does that mean those countries went bankrupt trying to pay us, and America lost money when they couldn't pay us.
- Teacher: Yes, that is exactly what happened. 31. _____
- Humberto: So, was that the final cause of the Great Depression?
- Teacher: Well, it's by no means the final cause, there were a couple of others, but I don't have time for that right now. 32. _____
- Teacher: Let's wrap it up with what we started with: the stock market, and this goes right in line with the idea of credit. 33. _____
- Teacher: How might have credit played a role? 34. _____
- Joey: What?! People were investing with credit?
- Teacher: You're darn right. They bought everything else on credit, so why not stock? It's called buying on expected returns. You assume that your first stock is going to make five hundred dollars, so they then buy another stock with five hundred dollars' worth of credit. 35. _____
- Teacher: And if the first stock unexpectedly ends up losing money then what might happen? 36. _____
- Fred: So, you have no money to pay, so both you and the company lose money.
- Teacher: You think that both you and the company lose money? 37. _____
- Teacher: Interesting. I think I understand what you are saying. 38. _____
- Teacher: Class. Partner up and discuss Fred's idea about what might happen. 39. _____

Teacher: Do you think he was correct? 40. _____

Teacher: Wait. The bell is going to ring. Put your notebooks back on the shelf and you are dismissed. 41. _____

Social Studies Practice 1 – Sheet 5.30 Stock Market and Great Depression KEY

Example	SATIC Coding	Reason
1.	10	Teacher answers a student question.
2.	3a	Teacher asks a yes/no question.
3.	1	Teacher is presenting new information to the students.
4.	4a	Technically, this is a yes/no question, making it literally a T3a, however, in the context of the dialogue, this is a short answer question requiring students to think about the question (T4a).
5.	7	Teacher confirms student response.
6.	1	Teacher is presenting new information to the students.
7.	10	Teacher answers a student question.
8.	2	Teacher makes a short statement about the topic.
9.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
10.	7	Teacher confirms student response.
11.	8	Teacher repeats what the student answered.
12.	1	Teacher is presenting new information to the students.
13.	10	Teacher answers student question.
14.	2	Teacher gives students directions.
15.	1	Teacher is presenting new information to the students.
16.	3a	Teacher asks a yes/no question.
17.	2	Teacher makes a short statement about the topic.
18.	4b	Teacher asks a thought-provoking question requiring students to give an extended response.
19.	10	Teacher answers student question.
20.	2	Teacher gives students directions.
21.	1	Teacher is presenting new information to the students.
22.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
23.	4a	Teacher asks a thought-provoking question requiring students to give a short response. The teacher is not using the student's response to continue the conversation.
24.	6	Teacher acknowledges student response.
25.	12	Teacher uses Joey's response to continue questioning class. While they do not directly use Joey's comment, they are asking students to compare their ideas with Joey's, making this a T12.
26.	11	Teacher requests that a student elaborate on their response.
27.	5	Teacher rejects student response.
28.	1	Teacher is presenting new information to the students.
29.	8	Teacher repeats student comment.
30.	7	Teacher confirms student response.

31.	7	Teacher confirms student response.
32.	10	Teacher answers student question.
33.	2	Teacher is making a short statement about the topic.
34.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
35.	7 & 1	First, the teacher confirms the student response (T7). Then, the teacher presents new information to the students (T1). There is a rhetorical question here as well, but it is included in the presentation of material and is not coded separately.
36.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
37.	8	Teacher is repeating what the student responded. This could also be read as the teacher repeating in order to confirm that they heard/understood correctly, in which case it may be considered a clarification(T11), but the repetition of statement is clearer here.
38.	6	Teacher acknowledges student response.
39.	12	Teacher uses a student response to begin a new conversation within groups.
40.	3a	Teacher asks a yes/no question.
41.	2	Teacher gives students directions.

Teacher: Here is what we are going to do today. We've got some map activities that we are going to look at the different peoples of the middle east. The main idea we are going to get from this lesson is the middle east is made up of a very diverse group of people that live in very close proximity, or they live just very close to each other. So, in a moment I am going to release you guys to the computers and you guys are going to use two different maps to fill out your assessment. But first I want to walk us through the maps because for sure I know you guys have not seen one type of map. And the other one is interactive, and I want to make sure you guys understand what all the different layers are, ok? So, first things first, the first map you are going to be seeing is not this one... it's this one. So, this map is interactive, and you can click on the different countries. Someone give me a country to click on.

1. _____

Darrius: Saudi Arabia.

Joseline: Iran.

Michael: Iran.

Teacher: I heard Saudi Arabia and Iran. I will do Iran because I heard it twice. What do you notice? What is this pie chart telling you?

2. _____

Darrius: The ethnicity.

Teacher: You are close, the ethnic groups. It is the different ethnic groups. So, there are going to be questions about the different ethnic groups. First, does everyone know what majority means?

3. _____

Darrius: The most.

Teacher: The most, so on this map who has the majority?

4. _____

Darrius: Persians.

Teacher: Persians. I know that is kind of hard to see because it's far away but once you get on the computer you

- can zoom in on it. Now what is a minority group
then? 5. _____
- Darrius: A group that is less.
- Teacher: A group that has a smaller population. For our sake
anything less than 50%. Which is for Iran, basically
anything that isn't what? 6. _____
- Darrius: Persia.
- Teacher: Persia. Awesome. Now there are going to be
questions about religion. And the way you find that,
you see where it says religion on this map right here? 7. _____
- Darrius: Mhmm.
- Teacher: You click on that. What do you see about the religion
in Iran? 8. _____
- Darrius: I can't see.
- Teacher: Oh, I am sorry (moves out of way) 9. _____
- Joseline: Muslim.
- Teacher: Muslim, perfect! Now there is also different tabs on
the bottom. Does everyone see these different tabs?
They change the map a little bit. One tab that you are
going to need to use is the historical, political
importance, and these are going to change. So, if you
want to see what the Middle East looked like in the
1600s, click on the 1600 and you will see what it
looks like. Makes sense? 10. _____
- Darrius: Yeah.
- Teacher: Feel good? Thumbs up, thumbs down? 11. _____
- Darrius: Thumb sideways.
- Teacher: Thumbs sideways? I see one thumb up, can anyone
else give me some thumbs? Okay perfect. Alright the
second map, this is a map I know you guys probably
have not seen yet. First impressions of this map? 12. _____
- Darrius: It looks confusing.
- Teacher: It looks confusing. 13. _____
- Darrius: It looks colorful.

- Teacher: Its colorful, which is why we are going to go over it.
So, you'll see these white boxes, these are different
keys. So, let's look at a key. Well first let's look at the
title. What does the title tell us about this map?
What type of map is it? 14. _____
- Darrius: Domestic population.
- Joseline: Different groups.
- Teacher: Ethnic groups of the Middle East. Are the two maps
that we are working with looking at the same thing?
Darrius? 15. _____
- Darrius: Race.
- Teacher: Yeah, ethnicity and race kind of are synonymous with
each other. Or they are synonyms. So, ethnicity, race,
it's just their cultural background. So, example for
me, I am Irish, German, and Polish. Those are my
ethnicities. Cool. So yeah, this is an ethnic map of the
Middle East. Let's go over to this key. What do these
colors represent? 16. _____
- Darrius: Lifestyle group in the area.
- Teacher: Oh you are one step ahead of me, you are one step
ahead of me. The amount of people in the area yeah,
you are one step ahead of me on that one. 17. _____
- Darrius: Personal language.
- Joseline: Ethnic groups.
- Teacher: Not languages, but ethnic groups I heard from
Joseline. 18. _____
- Darrius: Does it have something to do with language?
- Teacher: It's talking more about the ethnic groups I know it
says the speakers of Turkish languages but the Turks,
Turks isn't a language that's a people group. Azores,
that's not a language that's a people group they
speak a Turkish language so that is just how they are
splitting up their key. 19. _____
- Darrius: Ah.
- Teacher: So. What do you notice? There are two columns,
right? What do you think the two colors mean? 20. _____

- Darrius: The different groups.
- Teacher: The different groups. So, let's just look at one group, the Kurd's right here. Do you see how the Kurd's have a dark brown and a light brown? 21. _____
- Darrius: Mhmm.
- Teacher: What do you think that dark brown means? 22. _____
- Darrius: Population?
- Teacher: It does have to do with population. Once it gets darker what do you think that means? 23. _____
- Darrius: Stronger language.
- Joseline: More people live there.
- Teacher: More people are living in that area. Perfect. More people are living in that area. So, this lighter brown means what? 24. _____
- Darrius: Less people.
- Teacher: Less people who are Kurds live in that area. Does that make sense? 25. _____
- Darrius: Yeah.
- Joseline: Makes sense.

Social Studies Practice 2 – Middle Eastern Ethnicities KEY

<i>Example</i>	<i>SATIC Coding</i>	<i>Reason</i>
1.	1 &3b	Teacher presents new information first (T1), then asks students for a simple choice (T3b).
2.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
3.	3a	Teacher asks a yes/no question.
4.	3b	Teacher asks students to look on a map to answer a short-answer question.
5.	3b	Teacher asks a short answer question requiring definition recall.
6.	3b	Teacher asks a short-answer question.
7.	3a	Teacher asks a yes/no question.
8.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
9.	2	Teacher makes short statement.
10.	7, 1, 3a	Depending on what part of this statement you are analyzing, you may get different answers. First, the teacher confirms the student answer (T7). Then, the teacher presents new information to the student (T1). Finally, the teacher asks a yes/no question to make sure the students understand the information (T3a).
11.	3b	Teacher asks a short answer question.
12.	4a	Teacher asks a thought-provoking question requiring students to analyze a map and give a short response.
13.	8	Teacher repeats student's comment.
14.	3b	Teacher asks a short-answer question requiring students to read a map.
15.	3a	Teacher asks a yes/no question. Even though the student did not respond with a yes/no, the question is still formatted as one.
16.	3b	Teacher asks a short-answer question requiring students to read a map.
17.	9	Here the teacher is expanding on what the student said, clarifying it, making this a T9 and not just a statement about the topic (T2).
18.	5 & 7	The teacher both rejects one student's response (T5) and confirms another student's response (T7).
19.	10	Teacher answers a student's question.
20.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
21.	3a	Teacher asks a yes/no question.
22.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
23.	4a	Teacher asks a thought-provoking question requiring students to give a short response.

24.	4a	Teacher asks a thought-provoking question requiring students to give a short response.
25.	3a	Teacher asks a yes/no question.

Teacher: Alright class, today we are going to talk about some more punctuation, and I am going to give you an example of using a colon.

1. _____

Teacher: Imagine we are going camping, and I ask, “Did you remember to load up all the important things in your backpack COLON (teacher *pauses*) flying jungle-fish repellent, jungle-cow mace, and jungle-matches?

Teacher: Where did I place the colon?

2. _____

Joey: Well, I wouldn’t put the colon in the backpack: the colon is in my body.

Teacher: When I said colon, I meant the punctuation not the organ.

3. _____

Joey: Wait! How do I pack punctuation?

Teacher: I was just saying, “colon,” to let you know that you should use a colon to separate an independent clause when that independent clause sets up a list. “Student, did you remember to load up all the important things in your backpack” is an independent clause because it has a subject and a verb, and it can stand by itself as a complete sentence. This independent clause also suggests that a list will follow it; therefore, you should use a colon to separate it from the items in the list.

4. _____

Sam: Not that I care about any of this but let me try my own sentence. I packed COLON the jungle-fish repellent, jungle-cow mace, and the matches. How was that?

Teacher: Not at all correct.

5. _____

Sam: What?

Teacher: Yes, you did have a list, but if you look closer at your sentence, you’ll notice that you don’t have an independent clause. “I packed” is not an independent clause. It has a subject and a verb, but it can’t stand alone as a sentence

- because “I packed” doesn’t make much sense on its own. In your example, you would leave the colon out, because you need the items in the list to have the sentence make sense. 6. _____
- Teacher: Someone give an example of a sentence using a colon. 7. _____
- Juanita: Okay. So how about this sentence? During this dumb trip, all sorts of animals have chased me: COLON (*pauses*) jumping jungle-gators, saber-toothed jungle-chickens, and sloths.
- Teacher: Juanita, please explain how that is an example. 8. _____
- Juanita: Well you have an independent clause that sets up the list of jungle-gators, etc.
- Teacher: That’s correct. 9. _____
- Teacher: But, I still can’t believe that a sloth chased you. I mean those things never get angry, but you must have really got it mad. 10. _____
- Jaunita: I know. And I have a good imagination!
- Teacher: Yeah, well... your sentence with the colon was correct. 11. _____
- Teacher: “During this dumb trip, I’ve been chased by all sorts of animals” has a subject, a verb, and can stand on its own as a complete sentence. This independent clause also suggests that a list might follow, and so you correctly placed a colon between the independent clause and the list. 12. _____
- Joey: I’m still stuck on “I didn’t put my colon in the backpack: my colon is in my body.”
- Teacher: Well, you used a colon correctly again. 13. _____
- Andy: What? When?
- Teacher: Just a second ago. You said, “I didn’t put my colon in the backpack: COLON (*teacher pauses*) my colon is in my body.” 14. _____
- Andy: I’m confused. How did I use it correctly? 15. _____

- Teacher: Well, you spoke the sentence using a pause. If you wrote that sentence it would have a colon separating “backpack” from “my” therefore you used a colon correctly again.
- Andy: I’m still confused.
- Teacher: What are you confused about? 16. _____
- Andy: The colon thingy.
- Teacher: The colon thing? 17. _____
- Andy: Yes.
- Teacher: Class, another way you can use a colon is in between an independent clause and an explanation, rule, or example. In your sentence, you said, “I didn’t put my colon in the backpack,” which is an independent clause. The second part of that sentence was EXPLAINING why you didn’t put the colon in your backpack. 18. _____
- Terrance: Let me try. When I went on a cruise and after we docked, I went on a jungle excursion, but I felt angry that I was stuck in the jungle COLON because that dumb cruise ship left me there. How was that?
- Teacher: Nope! 19. _____
- Terrance: Why? It has an independent clause, and it has an explanation.
- Teacher: Class, what is the problem with that example? 20. _____
- Frank: Well Terrance included the word “because.”
- Teacher: By using “because,” you’ve taken away the need for the colon because you have a conjunction instead. You use a colon when you don’t have a conjunction. This is what your sentence should have been: “I feel angry that was stuck in the jungle: COLON I was left here by that dumb cruise ship.” 21. _____
- Terrance: I get it now.
- Teacher: Good. 22. _____
- Jose: Grammar rules aren’t that bad. 23. _____

- Teacher: Speaking of rules, the survival guide says there is one rule
that you must always follow in the jungle: COLON never
stare the Costa Rican jungle-rabbits in the eye.
- Andy: Oh, I see what you did there with the colon.
- Teacher: You see what I did with the colon thing? 24. _____
- Teacher: Tell me more. 25. _____
- Andy: The colon seems to be a pause button.
- Teacher: Interesting way to describe it. 26. _____
- Teacher: Tell me more about why it seems to be a pause button. 27. _____
- Andy: Yes, it is like two related thoughts joined by a colon.
- Teacher: Oh, I think I understand what you are saying. 28. _____
- Teacher: Students. To see if you really understand how to use a colon,
everyone please write three sentences using a colon. 29. _____

English Practice 1 – Sheet 5.40 Using a Colon KEY

<i>Number</i>	<i>SATIC Coding</i>	<i>Reasoning</i>
1.	2	Teacher gives a short statement and directions to the students.
2.	3b	Teacher asks a short-answer question requiring recall of the sentence.
3.	2	Teacher is clarifying their own statement here, making this a T2. It may be confused with a T9, as they are clarifying based on what a student said.
4.	1	Teacher is presenting new information to the students.
5.	5	Teacher rejects student answer.
6.	1	Teacher is presenting new information to the students.
7.	4a	Teacher asks a short answer question requiring thought to put together a correct sentence.
8.	11	Teacher asks student to elaborate on their answer.
9.	7	Teacher confirms student response.
10.	2	Teacher makes a short comment about the response.
11.	7	Teacher confirms the student response again.
12.	1	Teacher presents new information to the students.
13.	7	Teacher confirms student response.
14.	10 or 8	The teacher answers a student question (T10), however, the teacher is repeating the student response (T8).
15.	10	Teacher answers a student question.
16.	3b	Teacher asks a short answer question.
17.	8	Teacher repeats student response.
18.	1	Teacher presents new information to the class.
19.	5	Teacher rejects student answer.
20.	12	Teacher is using an incorrect response as a question for the rest of the class to answer.
21.	9	Teacher is interpreting the student's short response and elaborating on it.
22.	6	Teacher is acknowledging the student's comment that they understand material now.
23.	2	Teacher makes a short statement to the class.
24.	3a	Teacher asks a yes/no question.
25.	11	Teacher asks student to expand on their answer to the question and explain why they think something.
26.	6	Teacher acknowledges student response.
27.	11	Teacher asks student to expand on their answer to the question and explain why they think something.
28.	6	Teacher acknowledges student response without confirming or denying.
29.	2	Teacher gives directions to students.

- Teacher: I pound down on the ground and all around I hear the sound.
(Repeating) I pound down on the ground and all around I
hear the sound. 1. _____
- Sean: Calm down, Teacher.
- Teacher: Calm down about what? 2. _____
- Sean: There's no need to be pounding the ground so hard that it
makes a sound.
- Teacher: Sean, I wasn't going to actually pound the ground. 3. _____
- Susan: Well then what are you talking about?
- Teacher: I was illustrating an example of assonance. 4. _____
- Susan: Whose-o-nance?
- Teacher: Assonance. Class, assonance is when the repetition of vowel
sounds in phrases or sentences creates internal rhyming. 5. _____
- Teacher: Would someone give me an example of assonance? 6. _____
- Jose: Oh rhyming...like, "Sprat my cat sits on the hat and crushes it
flat."
- Teacher: No, Jose. 7. _____
- Teacher: That rhyme uses consonant sounds, not vowel sounds. 8. _____
- Jose: Oh great. Now you're getting all complicated. You lost me.
- Teacher: Class, just listen. Assonance uses vowel sounds. You know, A,
E, I, O, U and sometimes Y. 9. _____
- Emily: Sometimes why what?
- Teacher: No, Y is a vowel only sometimes. 10. _____
- Emily: I don't know! Why is a vowel only sometimes?
- Teacher: You know what students, forget what I said that about the
letter Y. Just listen. 11. _____

- Teacher: Assonance repeats vowel sounds within phrases or sentences. The repetition makes a rhyming within the phrase or sentence. The phrase that I said before, you know, about pounding the ground? 12. _____
- Sean: Yeah?
- Teacher: Well, the assonant sound in that phrase is the repetition of the “ou” sound. Like the “ou” sound in the word “found.” 13. _____
- Emily: Hey Teacher, what if I took this flower in the shower, do you think that would give it some power?
- Teacher: What are you talking about? Pay attention! 14. _____
- Emily: No, seriously. You know, flowers get power from showers.
- Teacher: Emily, you've got it. 15. _____
- Emily: What, flower power?
- Teacher: I am talking about assonance! In the phrase “flowers get power from showers.” The assonance is in the “O” sound, like in the word “cow.” 16. _____
- Sean: Cow?
- Teacher: No. Just listen. I gave you two examples! 17. _____
- Sean: Two, two and still I have no clue.
- Teacher: That's right! You just did it again! 18. _____
- Sean: Did what again?
- Teacher: Assonance! Examples! 19. _____
- Sean: Exactly! Two is far too few to learn through!
- Teacher: You got it right again! 20. _____
- Emily: Yeah, this assonance stuff isn't for me. I'm going to go shower with my flower.
- Teacher: Alright class. Who can come up with more examples? 21. _____
- Jamine: How about this? “With any luck I can drive the truck through the field.”

- Teacher: Alright. Let's play with that. 22. _____
- Teacher: Class, tell me what you think of Jamine's example of assonance and why or why not it is assonance. 23. _____
- Teacher: Is it an example of assonance? 24. _____
- Joey: Well sort of?
- Teacher: Anybody else?
- Vassily: Yes, I agree that is sort of assonance, but I think it can be improved but substituting one word.
- Teacher: Right. 25. _____
- Teacher: If we just substituted the word "muck" for the word "field" it would be "With any luck I can drive the truck through the muck." 26. _____
- Vassily: That's what I was going to say.
- Teacher: Ok. 27. _____
- Teacher: Vassily, what is another word to use in that sentence besides "muck?" 28. _____
- Vassily: "Buck."
- Teacher: Buck? 29. _____
- Vassily: Yea, buck.
- Teacher: Interesting. Tell me more. 30. _____
- Vassily: Ok. How about this? "With any luck I can drive my truck through the muck to make a buck."
- Teacher: Wow! That was really good! 31. _____
- Sean: Yes, and we could say "With any luck I can drive my truck with a duck through the much to make a buck."
- Teacher: Ok. Now we are just getting silly. Let's get back on track here. 32. _____
- Sean: What? I thought that was a great example.

Teacher: Ok. Take out your pens and paper and see if you can create three examples of assonance.

33. _____

English Practice 2 – Sheet 5.41 Learning About Assonance KEY

<i>Number</i>	<i>SATIC Coding</i>	<i>Reasoning</i>
1.	2	Teacher makes a short statement to the class.
2.	3b	Teacher asks a short-answer question to the class.
3.	2	Teacher makes a comment in response to a student's response.
4.	10	Teacher answers student question.
5.	2	Teacher makes a short statement to the class explaining what they meant in their previous answer.
6.	4a	Teacher asks a short answer question requiring students to answer using a new skill.
7.	5	Teacher rejects student answer.
8.	9	Teacher explains how the student's answer was incorrect.
9.	2	Teacher makes short statement about the topic.
10.	10	Teacher answers a student question.
11.	2	Teacher makes short statement about the topic.
12.	2	While this seems like a yes/no question based on student response, this is actually a question used in a rhetorical sense in order to make a statement about the topic.
13.	2	Teacher makes short statement about the topic.
14.	5	The teacher here is rejecting the students comment/question by scolding them for talking.
15.	7	Teacher confirms student answer.
16.	2	Teacher makes short statement about the topic.
17.	5	The teacher here is rejecting the students comment/question by scolding them for talking.
18.	7	Teacher confirms student answer.
19.	10	Teacher answers student question.
20.	7	Teacher confirms student answer.
21.	4a	Teacher asks a short answer question requiring students to answer using a new skill.
22.	6	Teacher acknowledges student response without confirming or denying it.
23.	12	Teacher uses Jamine's response as an idea for the rest of the class to work off of.
24.	3a	Teacher asks a yes/no question.
25.	7	Teacher confirms student answer.
26.	9	The teacher is expanding on the correct answer given to them and explaining it to the rest of the class.
27.	6	Teacher acknowledges student comment.
28.	3b	Teacher asks a short-answer question requiring finding a similar word.
29.	8	Teacher repeats student response.
30.	11	Teacher asks student to elaborate on their answer.

31.	7	Teacher affirms student response.
32.	2	Teacher makes a statement to direct class attention.
33.	2	Teacher gives directions to students.

English Practice 3 – Learning About Consonance

Sheet 5.42

- Teacher: Class, now that you are geniuses at assonance, I want to talk about consonance. 1. _____
- Sean: Consonance...the opposite of vowels, right? A, B, C, D, F, G ...
- Teacher: Class, A, B, C, D, etc are examples of what? 2. _____
- Class: Consonants!
- Teacher: Right. 3. _____
- Teacher: A, B, C, D, F, G are “consonants.” We are going to talk about consonance! 4. _____
- Emily: OK. So, what is consonance?
- Teacher: Consonance is the repetition, at close intervals, of the final consonants of accented syllables or important words, usually at the ends of words. It also occurs close together. 5. _____
- Susan: Holy moly teacher! Speak English please, or Greek for all I care – it’s all Greek to me anyway.
- Teacher: OK. Listen to these phrases... odds and ends... struts and frets... dark and dank... 6. _____
- Teacher: What do those pairs of words have in common? 7. _____
- Jose: Both words have some letters that are the same?
- Teacher: Yes, they do Jose. 8. _____
- Teacher: But there is something else. Listen to the ends of those words. That’s what you want to pay attention to. 9. _____
- Emily: What? The ends of the words “odds and ends?”
- Teacher: Yes that is correct! 10. _____
- Teacher: The hard “d” sound is consonant. 11. _____
- Frank: I don’t get it.
- Teacher: Class, like the term “think tank,” The “nk” is the consonant sound. 12. _____
- Frank: You know what I think?

- Teacher: What? 13. _____
- Frank: I think you stink! Just kidding.
- Teacher: Interesting example. 14. _____
- Teacher: "Think" and "stink" is an example because the nk in think and the nk in stink makes it consonance. 15. _____
- Frank: What?
- Teacher: You did it again! 16. _____
- Frank: Wait, what?
- Teacher: You're doing just what you did with assonance. Except now you're doing it with consonance. 17. _____
- Teacher: Someone give me another example of consonance and explain why it is consonance. 18. _____
- Eli: I can't learn when you're so stern.
- Teacher: Interesting example Eli. 19. _____
- Teacher: "Learn" and "stern." 20. _____
- Eli: Yes. Was I right?
- Teacher: Class, how is "learn" and "stern" an example of consonance? 21. _____
- Leonardo: Hey teacher, calm down. Back track before you have an attack!
- Teacher: "Ack" "ack." 22. _____
- Leonardo: Oh, Teacher. You've gone and done it now. You've gotten yourself so worked up that you've gotten sick again.
- Teacher: You all keep doing it... and you still say you don't get it. Don't you get it? 23. _____
- Emily: C'mon, Teacher. I'll get you into the bathroom. You can take a power shower and use the bathroom as your own personal think tank.
- Teacher: Consonance and assonance... in the same sentence! 24. _____
- Teacher: Oh my. I think I'm going to lose my brain in vain. 25. _____

English Practice 3 – Sheet 5.41 Learning About Consonance KEY

Number	SATIC Coding	Reasoning
1.	2	Teacher makes a short statement to the class.
2.	3b	Teacher asks a short answer question requiring recall.
3.	7	Teacher confirms student response.
4.	2	Teacher makes a short statement to the class.
5.	10	Teacher answers student question.
6.	2	Teacher makes a statement to the class about the topic.
7.	4a	Teacher asks a short-answer question requiring thought about a new concept.
8.	7	Teacher confirms student answer.
9.	2	Teacher gives student directions.
10.	7	Teacher confirms student answer.
11.	9	Teacher makes a short statement clarifying what the student answered and why it is correct.
12.	2	Teacher makes a short statement to the class.
13.	10	While it is formatted as a question to the student, this is a response to a student question and can be coded as a T10.
14.	6	Teacher acknowledges student comment.
15.	9	Teacher makes a short statement clarifying what the student answered and why it applies to the topic.
16.	7	Teacher confirms student answer.
17.	9	Teacher makes a short statement clarifying what the student answered and why it is correct.
18.	4b	Teacher asks an extended question requiring students to use their new skill to come up with an example as well as explain why they made it.
19.	6	Teacher acknowledges student comment.
20.	9	Teacher makes a short statement clarifying what the student answered and why it applies to the topic.
21.	4a or 12	Teacher asks a short-answer question about the topic. This could also be coded as a T12 since it uses a previous student's example to frame the question.
22.	9	The teacher is interpreting what they believe the example was that the student was trying to make.
23.	3a	Teacher asks a yes/no question.
24.	2	Teacher makes a short statement about the topic.
25.	2	Teacher makes a short statement about the topic.

English Practice 4 – Learning About Parallelism

Sheet 5.43

Sean: I'm tired of work, I'm tired of school...I'm...just...tired.

1. _____

Teacher: Sean is tired.

Sean: Yes. I'm tired of people making me do all the work. I'm tired of my teachers giving me homework. I'm tired of my parents making me do chores.

Teacher: What is one symptom of you being tired?

2. _____

Sean: I'm tired of you always having some new English concept to teach me.

Teacher: Like parallelism?

3. _____

Sean: Oh, no! What –alism?

Teacher: Class, what is your best guess as to what parallelism might be?

4. _____

Emily: We have no idea.

Teacher: Can anyone give me an example of parallelism?

5. _____

Students: Noooooo!

Teacher: Well, Sean was using it right now. So, there's really no need for me to teach it to the class. Sean, you teach it because I am tired.

6. _____

Emily: Oh, great! Now you're tired too.

Teacher: No, Emily. That's the example of parallelism that Sean was using.

7. _____

Jose: So, parallelism means two people being tired at once – both you and me. We're like parallel lines. Hot dog! I get it!

Teacher: No, Jose.

8. _____

Teacher: Parallelism deals with the construction of the sentences you are saying. Parallelism is a balance of two or more similar words, phrases, or clauses. You created a pattern.

9. _____

Jose: What's the pattern?

Teacher: The pattern is that Sean is tired.

10. _____

- Jose: Well, but that's just a phrase Sean just keeps repeating.
- Teacher: Yes, it is. 11. _____
- Teacher: However, his decision to use the same subject, verb, and adjective, saying the phrase "I am tired," created a certain effect, and that effect is used in speech and writing to persuade or to make a point. 12. _____
- Emily: I don't get it.
- Teacher: Well, in the Declaration of Independence, the founding fathers of America used the phrase "he has..." to blame the king of England for all their miseries. It helped start the American Revolution. 13. _____
- Frank: By saying the phrase "he has?"
- Teacher: A-hem. Listen here, class. The Declaration of Independence - and I quote, "He has refused his assent to laws...He has called together legislative bodies at places unusual...He has made judges dependent on his will alone...He has erected a multitude of new offices..." 14. _____
- Teacher: Someone tell me if this might be an example of parallelism and why you think so. 15. _____
- Frank: So, this repetition had the effect of making everyone think the king of England was directly responsible for doing all those bad things.
- Teacher: Exactly. 16. _____
- Leonardo: But the Founding Fathers of America were guys who wore powdered wigs and drank tea. Nobody uses parallelism anymore.
- Teacher: Have you ever heard of the "I Have a Dream" speech? 17. _____
- Juanita: By Dr. Martin Luther King Jr.?
- Teacher: Exactly! 18. _____
- Teacher: Martin Luther King Jr.'s "I have a Dream" speech - and I quote, "I have a dream that one day on the red hills of

- Georgia the sons of former slaves and the sons of former slave owners will be able to sit down together at the table of brotherhood. I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin but by the content of their character. I have a dream today.”
- Teacher: Someone explain to me how that is an example of parallelism.
- Juanita: Ok. So, the parallelism there is “I have a dream,” right? It associated the fight for civil rights in America with a dream of equality for everyone.
- Teacher: Perfect!
- Susan: Yeah, but that was still forever ago. I mean, nobody talks like that anymore.
- Teacher: Here is another example, “We will not tire, we will not falter, we will not fail.”
- Sean: I don’t recognize that one.
- Teacher: That was said by former President George W. Bush several days after September 11th, 2001.
- Pep: Wow. So, people are still using parallelism today.
- Teacher: Yes. In fact, many people try to use it constantly in both speech and writing to create the same effects that it has had in the past. It helps to persuade, convince, and get points across.
- Sean: So, have I persuaded you that “I’m tired?”
- Teacher: No, Sean.

19. _____

20. _____

21. _____

22. _____

23. _____

24. _____

25. _____

English Practice 4 – Learning About Parallelism KEY

<i>Number</i>	<i>SATIC Coding</i>	<i>Reasoning</i>
1.	2	Teacher makes short comment about a student.
2.	3b	Teacher asks a short answer question.
3.	3a	Teacher asks a yes/no question.
4.	4a	Teacher asks a short-answer question requiring speculation.
5.	3a	Teacher asks a yes/no question.
6.	12	The teacher is using a student's statement as an idea for the class to learn from.
7.	5	Teacher rejects student comment.
8.	5	Teacher rejects student answer.
9.	2	Teacher makes a brief statement explaining the topic they are discussing.
10.	10	Teacher answers student question.
11.	7	Teacher confirms student comment.
12.	9 or 12	Here the teacher is clarifying what Jose said and explaining how that statement is a pattern (T9). However, it could also be coded as a T12 because it uses the original comment made by Sean to explain an idea.
13.	2	Teacher makes a statement to try to reinforce the ideas being presented.
14.	1	Teacher is reading a section of the Declaration, presenting information to the class.
15.	4b	This is a yes/no question initially but requires students to think critically and explain why they gave the answer they did.
16.	7	Teacher confirms student response.
17.	3a	Teacher asks yes/no question.
18.	7	Teacher confirms student response.
19.	1	Teacher is reading a section of a speech, presenting information to the class.
20.	4b	Teacher asks a question that requires students to think critically and explain their thoughts.
21.	7	Teacher confirms student response.
22.	2	Teacher makes a statement to try to reinforce the ideas being presented.
23.	2	Teacher makes a statement to explain their comment.
24.	7	Teacher confirms student answer, expanding on the idea in a short statement.
25.	5	Teacher rejects student answer.

References

- Abraham, M. & Schlitt, D. (1972). Verbal interaction: A means for self-evaluation. *School Science and Mathematics*, 78, 678-686.
- Clough, M., Berg, C., and Olson, J. (2009). Promoting effective science teacher education and science teaching: A framework for teacher decision-making. *International Journal of Science and Mathematics Education*. 7(4):821-847. DOI: [10.1007/s10763-008-9146-7](https://doi.org/10.1007/s10763-008-9146-7)
- Penck, J., Crow, L., Bonnstetter, R. (1996). Questions are the Answer: A logical questioning strategy for any topic. *The Science Teacher*. 63(1):27-29.
- Rowe, Mary B. (1986). Wait Time: Slowing down may be a way of speeding up! *Journal of Teacher Education*, Jan-Feb. Pp. 43-50.