ALTOS Observer Reference Manual:

Academic Learning Time Observation System

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Project ALT

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Bloomington, Indiana

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Acknowledgement

This observation system and manual are adaptations of those developed in the Beginning Teacher Evaluation Study (BTES) by Marliave, R., Fisher, C., Filby, N. and Dishaw, M. The development of instrumentation for a field study of teaching: Technical Report I-5, February, 1977, pps. B-1, B-124. Their definitions of reading and math content categories for grades 2 and 5 are combined here into a single set of definitions. Their definitions of learner moves, instructor moves, instructor focus, task difficulty, and pacing are also used here, although the examples are original here. The coding procedures, coding forms, and remaining categories used herein depart from those in the BTES materials cited above.
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* TS refers to the target student—the single student being observed and coded.
ALTOS IDENTIFICATION SHEET

Observer: ___________________________  ID#  
Teacher: ___________________________  ID#  
Target Student: _____________________  ID#  

Class Type: 

\[
\begin{align*}
1 &= \text{Regular} \\
2 &= \text{Resource} \\
3 &= \text{Self-Contained} \\
4 &= \text{Other} \\
\end{align*}
\]

Class Size Today

General Comments: ________________________________________________________________
______________________________________________________________________________
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CATEGORIES FOR REAL-TIME CODING OF
TARGET STUDENT, INSTRUCTOR AND FOCUS

1. Classification: Learner Moves (for target student, and only coded in Math and Reading)

Categories: EW. Engaged - Written Response  
EO. Engaged - Oral Response  
EC. Engaged - Covert Response  
ED. Engaged - With Directions About Task  
NI. Non-Engaged - Interim  
NW. Non-Engaged - Wait  
NO. Non-Engaged - Off-task

Priority Hierarchy

1. EO, EW
2. EC
3. ED
4. NI, NW, NO

2. Classification: Instructor Moves (only coded when instructional move is relevant to target student in math and reading)

Categories: AM. Academic Observational Monitoring  
AF. Academic Feedback  
AQ. Academic Questioning  
XN. Explanation - Need  
XP. Explanation - Planned  
SD. Structuring/Directing  
TF. Task Engagement Feedback  
NU. Null

Priority Hierarchy

1. XN
2. XP
3. AF, AQ
4. AM
5. SD
6. TF
7. NU

3. Classification: Focus of Instructor Move

Categories: TS. Target Student  
GR. Group (of which Target Student is a member)  
NU. Null
(Complete this sheet for each activity--do not include transition time)

ALTOS
EDUCATIONAL ACTIVITY SHEET

Number of students engaged in same activity as TS, including TS

TS Pacing
{ 1 = SELF-PACED
2 = OTHER PACED
}

Describe the major task(s) that the TS does in this activity:

Predominant TS Activity:
{ 1 = ORAL READING
2 = SILENT READING
3 = RECITING
4 = LISTENING
5 = DISCUSSING
6 = WRITING
7 = OTHER
}

Task Difficulty for TS:
{ 1 = EASY
2 = MEDIUM
3 = HARD
}

TS Instructor:
{ 1 = TEACHER
2 = PEER (TUTOR)
3 = AIDE (ADULT)
4 = SELF-INSTRUCTIONAL MATERIALS
5 = TEACHING MACHINE/TUTOR (A/V)
6 = NO INSTRUCTOR
}

Describe the major task(s) that the instructor does in this activity:

Predominant Instructor Activity with TS:
{ 1 = LECTURING
2 = DISCUSSING
3 = PROMPTING
4 = MODELING/DEMO
5 = TESTING
6 = SUPERVISING
7 = OTHER
}

(Over)

Don't forget to complete other side!
Content (Curriculum Subject Matter):

Note: Use SECONDARY for coding reading/math only when PRIMARY is some other subject matter (e.g., science, social studies) that requires TS reading/math related tasks.

Reading: 10. Decoding/Phonics
11. Word Structure
12. Word Meaning
13. Comprehension
14. Reading Practice
15. Spelling
16. Grammar
17. Composition/Creative Writing
18. Reading Related – Other
19. Reading Below Test Level

Math: 20. Addition/Subtraction (No Regrouping)
21. Addition/Subtraction (With Regrouping)
22. Computational Transfer
23. Place Value/Numerals
24. Multiplication
25. Division
26. Fractions/Decimals
27. Spatial Application
28. Verbal Application (Word Problems)
29. Math Related – Other
30. Math Below Test Level

Other Academic: 40. Physical/Biological Sciences
41. Social Sciences
42. Foreign Language

Non-Academic: 50. Art
51. Music
52. Technological Arts
53. Physical Education (Supervised)
54. Perceptual Development
55. Management/Procedural
56. Recreation/Break
57. Personal Experiences/Feelings
58. Other

Describe the content and curriculum materials used by TS in this activity:

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

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________________________________________________________________________________________

Time Stopped: __: __
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Introduction to ALTOS

The Academic Learning Time Observation System (ALTOS) was designed to characterize how elementary level students spend their time during the school day. The information gained from direct classroom observation and coding on ALTOS will be correlated with student achievement information obtained before and after the period of classroom observations.

First, we want to know the time allocated to different activities (e.g., language arts, math, science, recess) throughout the day. Next, we are interested in student and teacher engagement time during those activities which include math or reading related tasks. And, most importantly, we want to know how well students perform on those tasks.

There are three kinds of ALTOS coding forms used: 1) ALTOS Identification Sheet; 2) ALTOS Educational Activity Sheet; and 3) ALTOS Real-Time Coding Sheet. To accurately and consistently use these forms, extensive observer training is required. Furthermore, observers must have adequate knowledge of elementary reading and mathematics content (through sixth grade) in order to judge the success of student performance in these areas.
Flowchart for ALTOS
Coder Decision Making

1. Start day

1.1-1.6. Complete a new ID Sheet for this TS* and Teacher

1.7. Write any comments and staple together this completed packet.

YES

2. Has a new TS educational activity begun?

NO

1. Has the teacher changed?

NO

YES


2.2. Does this activity involve any math or reading by TS?

YES

Code clock time and behavior(s) using real-time categories by time-sampling at one-minute intervals.

3.1. Has current activity ended?

NO

YES

*Note: TS is the target student to be observed throughout the day.
Observer: ________________________________

Teacher: ________________________________

Target Student: ____________________________

Class Type: 

{ 1 = Regular  3 = Self-Contained }
{ 2 = Resource  4 = Other ________ }

Class Size Today

General Comments: _____________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

CATEGORIES FOR REAL-TIME CODING OF
TARGET STUDENT, INSTRUCTOR AND FOCUS

1. Classification: Learner Moves (for target student, and only coded in Math and Reading)

Categories: 

EW. Engaged - Written Response
EO. Engaged - Oral Response
EC. Engaged - Covert Response
ED. Engaged - With Directions About Task
NI. Non-Engaged - Interim
NW. Non-Engaged - Wait
NO. Non-Engaged - Off-task

Priority Hierarchy

1. EW, EO
2. EC
3. ED
4. NI, NW, NO

2. Classification: Instructor Moves (only coded when instructional move is relevant to target student in math and reading)

Categories: 

AM. Academic Observational Monitoring
AF. Academic Feedback
AQ. Academic Questioning
XN. Explanation - Need
XP. Explanation - Planned
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TF. Task Engagement Feedback
NU. Null

Priority Hierarchy

1. XN
2. XP
3. AF, AQ
4. AM
5. SD
6. TF
7. NU

3. Classification: Focus of Instructor Move

Categories: 

TS. Target Student
GR. Group (of which Target Student is a member)

No. 11
ALTOS IDENTIFICATION SHEET

1. General: The identification sheet needs to be completed once per teacher/classroom change for the target student (TS). For example, if TS goes to Mrs. Jones' classroom at 8:30 a.m., you would complete the ID sheet then. As long as TS is in Mrs. Jones' class, this sheet identifies to whom the other coding forms completed during that time refer. Suppose at 10:30 TS goes to music class (or the music teacher comes to TS's classroom). At this time you would staple together the previously completed ID sheet for Mrs. Jones and other coding forms, to finish that coding packet. Then you would fill out a new ID sheet for the music teacher.

1.1. Date: Enter today's date—six digits (e.g., 01/20/80).

1.1.1. Time: Enter the current time.

1.2. Observer Name: Write your name here and your ID# in the double box to the right. See master list for ID#'s.

1.3. Teacher Name: Write the name of the teacher of the classroom you are now in and his/her ID#. See master list for assigned ID#'s.

1.4. Target Student (TS): The target student is the only student you will be observing. Write his/her name and ID#.

1.5. Class Type: You should know the class type from the master list. Enter the class type code number in the box to the right.

1.6. Class Size Today: Count the total number of students present, including TS. Enter that number in the double box to the right.

1.7. General Comments: This is to be completed when you staple the packet together (i.e., there is a teacher change or it is the end of the day). Note anything that seemed extraordinary or unusual about the coding period you just finished for this packet.

1.8. Categories for Real-Time Coding: This is for your later reference, if needed, when you do real-time coding of teacher and student behavior in reading/math related activities. This has nothing to do with the ID sheet, but was put here for convenient reference.
Number of students engaged in same activity as TS, including TS

TS Pacing

1 = SELF-PACED
2 = OTHER PACED

Describe the major task(s) that the TS does in this activity:

Predominant TS Activity:

1 = ORAL READING
2 = SILENT READING
3 = RECITATION
4 = LISTENING
5 = DISCUSSION
6 = WRITING
7 = OTHER

Task Difficulty for TS:

1 = EASY
2 = MEDIUM
3 = HARD

TS Instructor:

1 = TEACHER
2 = PEER (TUTOR)
3 = AIDE (ADULT)
4 = SELF-INSTRUCTIONAL MATERIALS
5 = TEACHING MACHINE/TUTOR (A/V)
6 = NO INSTRUCTOR

Describe the major task(s) that the instructor does in this activity:

Predominant Instructor Activity with TS:

1 = LECTURING
2 = DISCUSSING
3 = PROMPTING
4 = MODELING/DEMO
5 = TESTING
6 = SUPERVISING
7 = OTHER

(OVER)

DON'T FORGET TO COMPLETE OTHER SIDE!
Content (Curriculum Subject Matter):

Note: Use SECONDARY for coding reading/math only when PRIMARY is some other subject matter (e.g., science, social studies) that requires TS reading/math related tasks.

Reading: 10. Decoding/Phonics
11. Word Structure
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21. Addition/Subtraction (With Regrouping)
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23. Place Value/Numerals
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Other Academic: 40. Physical/Biological Sciences
41. Social Sciences
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Non-Academic: 50. Art
51. Music
52. Technological Arts
53. Physical Education (Supervised)
54. Perceptual Development
55. Management/Procedural
56. Recreation/Break
57. Personal Experiences/Feelings
58. Other

Describe the curriculum materials used by TS in this activity:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Time Stopped: 3 : 53

DON'T FORGET TO COMPLETE OTHER SIDE!
ALTOS EDUCATIONAL ACTIVITY SHEET

2. General: An educational activity is something the TS is expected to do by the teacher during some period of time. Usually the activity can be characterized by one of the curriculum content categories listed on the reverse side of the educational activity sheet. We are not interested in describing transitions between activities here, but describing for each activity the setting, the TS tasks, the instructor tasks, and the curriculum content and materials. You will complete this educational activity context sheet whenever the activity changes for the target student. You will know the activity changes whenever there is a change in one or more of the: TS task, instructor, instructor task, or curriculum content. For example, there would be an activity change if TS was in a small oral reading group and then moved to do independent seatwork on phonics, because both the setting (pacing) and curriculum content changed for TS. Or, if TS finished his/her phonics worksheet and then began working on an addition facts worksheet, there would be an activity change because of a change in the curriculum content. Or, if the teacher had been giving a demonstration at the board on how to solve fractions problems and then assigned similar problems in the math text for TS to do at his/her seat, there would be a change in the setting from other-paced to self-paced; in the TS task from listening to writing; in the instructor from teacher to no instructor; and in the instructor activity from modeling/demo to supervising. You always judge the activity from the point of view of TS and what is available for TS to attend to and do.

2.1. Time Started: This is the time at which the current activity for TS ACTUALLY begins. Time Stopped will indicate when this activity ACTUALLY ends. It is very important to accurately record starting and stopping times (to the nearest minute). This allows us to know how much time was allocated for this particular activity. Do not include transition time here, such as getting or putting away materials or supplies needed for the activity, moving to a different area of the classroom between activities, cleaning up, erasing board, lining up, etc.

2.2. Now, the most important thing to determine is whether the current TS activity includes any reading or math, even though the subject matter may be named something else, such as social studies or science. If the activity does require TS to do reading or math, then you immediately begin real-time coding, using the Real-Time Coding Sheet, until the current activity is over. At that time, you will return to the Educational Activity Sheet and immediately record Time Stopped and then complete all remaining items on the Educational Activity Sheet.

If the current activity does not include any reading or math, then you do not use the Real-Time Coding Sheet. In this case you simply observe TS and other students (to disguise your focus) until the activity is over, and then record Time Stopped and complete all remaining items.
2.3. **Number of Students Engaged in Same Activity as TS:** How many students in the class are currently expected to be engaged in exactly the same activity as is TS? Count them, including TS, and enter the number in the right-hand double box. For example, if TS is in an oral reading group of 8 students, enter 8. Or, if the entire class of 27 is doing the same math worksheet, enter 27. Or, if the teacher is drilling TS on sight vocabulary words with flashcards and the rest of the class is doing something else, enter 1.

2.4. **TS Pacing:** What is essential here is who determines the TS pacing of work during the activity. If TS determines the pacing, then it is **self-paced** (code = 1). For example, if TS is working at his seat on a math worksheet, (i.e., independent seatwork), this would be self-paced. Or, if TS is working independently in the map area on his geography, even though several other students are also working there at the same time, this would be self-paced.

On the other hand, if someone or something else mostly determines the TS pacing, then it is **other-paced** (code = 2). For example, if the teacher or other students are reading a story aloud in reading group, this would be other-paced. Other examples of other-paced: teacher is giving a demonstration; TS is watching a movie; TS is being drilled on math facts by a peer; teacher is giving a spelling test to the class; TS is listening to a cassette tape and following along by silently reading the spoken text. In other-paced activities the rate of TS's engagement is determined externally on a moment by moment basis most of the time.

Do not code externally imposed time limits for an entire activity as other-paced. For example, if the teacher tells the whole class they have 15 minutes to individually copy their spelling words, this would be self-paced, since TS can do the copying independently at his own rate during the 15-minute period.

Enter the pacing code in the box to the right.

2.5. **Describe the major tasks that TS does in this activity:** In your own words, list the major behaviors in which TS engages in this activity. Be precise. For example, in oral reading: most of the time TS followed along in his reader while other students read aloud. He was asked to read two paragraphs aloud by the teacher and only made a few mistakes, although his reading rate was relatively slow, compared to others'. Occasionally, he was asked by the teacher to answer a question about the story (comprehension questions).

Another example, math seatwork: TS was given a math worksheet, with pictures of pies (or circles) with slices marked. For each written fraction (e.g., 3/4), he was supposed to color in the proportion of the pie corresponding to the fraction. He did very poorly on this. He colored each slice a different color. Apparently he didn't understand the directions or he doesn't understand the basic concepts of fractions.
2.6. **Predominant TS Activity:** Try to determine which of the following was the predominant specific TS activity:

1. **Oral reading:** TS reads text aloud or visually follows along as someone else does so.
2. **Silent reading:** TS reads text silently by himself/herself and no one else is reading that text aloud.
3. **Reciting:** TS is required to verbally repeat or speak aloud something memorized as all or part of the lesson before the instructor, e.g., spelling aloud, given a word; saying answers to math flash card drill; reciting memorized poem in front of class; gives synonyms or antonyms for vocabulary words; counts aloud to 100 in front of teacher; recalls aloud multiplication facts (6 x 1 = 6, 6 x 2 = 12, 6 x 3 = 18...); given a word says a sentence with that word; given a state, names the capital; makes the phonetic sound when presented with consonant blends (th, sh, st, cr,...); recalls part of a story just read. In recitation there is a clearly right or correct oral response (close-ended) expected of TS by the instructor.
4. **Listening:** TS is required to listen to someone or something present information orally (e.g., lecture, movie, a story being read aloud and TS does not visually follow the text)
5. **Discussing:** There is verbal exchange (conversation) between TS and others, and it is mostly open-ended. TS may ask questions, make comments, express opinions, express pro's and con's about subject under consideration and/or answer open-ended questions (usually no right or correct answer). If TS does not participate in the discussion at all but just listens, code listening not discussing.
6. **Writing:** TS writes by print or cursive letters or writes numbers. Do not include drawing. E.g., copying spelling words, doing math worksheet by writing answers to problems, writing a composition, writing fill-in-the-blank vocabulary exercise, tracing letters with pencil. Do not include drawing.
7. **Other:** TS is engaged in some other activity not listed above, e.g., free hand drawing, cut and paste, dancing, singing, playing soccer, etc. Specify the predominant "other" activity in the blank.

What if more than one TS activity is about equally predominant? Multiple codes can be used here if there is more than one specific TS activity that occurs about equally often, e.g., TS silently reads workbook questions about a story and writes down the answers in the workbook. This would be coded [26].
2.7. Task Difficulty for TS

The difficulty level of a task for the target student, easy, medium or hard, must be coded for all reading and mathematics events. Difficulty is coded to indicate the cognitive demands of the reading or mathematics task for the individual student.

Easy represents work on existing knowledge or skills of the student. Time at this level may serve as useful reinforcement of existing skills. It includes review and practice. Few errors are made and little effort is required of the student.

Medium difficulty is the middle range between easy and hard, representing those activities that are generally challenging for a target student, involving some unacquired and some existing knowledge or skills of the student.

Hard is a category consisting of tasks that the target student cannot perform beyond a chance level of correct responses. That is, the student shows essentially no understanding of the task.

The primary basis for determining the difficulty level of a task for a target student is the error rate of that student for the kind of problems included in that task. However, in addition to error rate, the speed with which a student works will sometimes be used to differentiate the easy and medium difficulty categories. The easy category is characterized by a very low error rate, where the student appears to be responding with virtually no errors, except what you might expect by chance (careless errors). The hard category is characterized by an extremely high error rate, where the student appears to show virtually no correct responses, except what you would expect by chance (luck). The medium category includes the range between easy and hard. The additional consideration of the speed with which the student works through the problems enters in when virtually no errors are observed, but the student is working at a noticeably slower than average pace. If such an unusually slow but errorless response rate is not simply a function of a low level of engagement, but in fact appears to be the result of the difficulty of the task for that student, then medium would be coded rather than easy.

The observer should take into account the speed with which the student completes a task only when the student is obviously much slower than the average student in that classroom working on that task. For example, if the target student has spent 30 minutes on the first three problems of a 20 problem computation worksheet, while most of the class completed the entire worksheet in less than 30 minutes, then medium would be coded even if the target student has answered those first three problems with no errors.

Difficulty level is not coded on a problem-by-problem basis. All of the problems within the related set receive the same difficulty code, according to the student's performance on the set as a whole.

It should be noted that difficulty is always coded for the academic task that determines the content code for a given event. Therefore, when the student is listening to the teacher give directions or task engagement feedback, the coding of difficulty does not relate to those directions or that feedback per se. Rather, it relates to the content of the academic task to which the directions or task engagement feedback apply.
Accurate coding of difficulty level will obviously be, itself, an extremely difficult task in some cases. Nevertheless, the difficulty level of reading and mathematics content must always be coded, even when the student was not engaged in the task for which difficulty is coded. Where little information is available for the determination of difficulty level, the observer must make his/her best judgment at the time.

The judgement of difficulty level must be made on the basis of overt responses by the target student in relationship to the task under observation. Therefore, the coding of difficulty will be less reliable when few or no overt responses are observable. However, it will be possible to isolate, for the purposes of data analysis, those events for which there may have been few or no observable overt responses. These events will be characterized by the learner moves coded with them,* indicating that the student's engaged response was covert or that the student was not engaged. Therefore, it will be possible to analyze the extent to which the availability of overt student responses is related to the reliability with which difficulty level can be coded.

It should be noted, however, that the observer can often judge difficulty on the basis of overt responses even when no overt response occurs within the particular activity being coded. Previously observed overt responses for the same kind of problems can be used to determine difficulty. In addition, the observer can simply ask the target student to perform a problem overtly (read aloud, compute a mathematics problem, etc.). Often it is possible to ask a student to do a problem during the ongoing observation. In other cases, the observer may prefer to wait until a recess or lunch period, ask the student to perform a problem, and retrospectively code the difficulty level for previous activity.

Several specific situations warrant consideration to clarify the application of the procedures described above. First of all, the error rate used to judge difficulty must be evaluated in terms of the probability that a student can guess the answer to a problem without understanding it. This will depend a great deal upon the kind of problem performed by the student. For example, if the student is writing complete sentence answers to reading comprehension questions, then there is very little possibility of his/her correctly guessing the answer. However, if the student is responding to true-false questions for reading comprehension, then there is a fifty percent probability of his/her correctly guessing the answer.

Error rates and the probability of guessing correctly are not as readily applicable to oral reading as they are to other activities. This is because there are many opportunities for errors, and little apparent chance for guessing (decoding and comprehension skills would have to be applied in order to guess). Furthermore, the passage to be read may be a combination of extremely easy and extremely difficult words. For the purpose of enhancing the reliability of coding between observers, a simple rule will be used here. If the student is unable to read only

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*Learner moves are coded on the Real-Time Coding Sheet.
In this regard, the passage may be coded as easy for that student. If the student is generally unable to read at least two but more than eighty percent of the words in each paragraph, the passage will be coded as medium for that student. If the student is unable to read more than eighty percent of the words per paragraph, then the passage will be coded as hard for that student. "Unable to read" would apply to words that the student cannot read properly without prompting. This should not include careless errors. If it appears that a student has misread a word only because of a careless error, then that error should not be included in the determination of error rate.

The context within which problems are performed may affect the error rate for those problems. For example, a given student might be able to perform certain computation problems with virtually no errors when working alone at his/her seat. The same student, however, might be so distracted when working at the board in the front of the class that he/she shows a high error rate, possibly even being unable to answer the problems at all. Those problems for that student would therefore be coded at different difficulty levels depending upon whether the student is working at his seat or at the board. Hence, the context within which the problems are performed is considered to be part of the problems themselves, for the purpose of coding difficulty.

2.8. **TS Instructor:** Who or what is doing the instructing (providing information, soliciting TS responses, giving feedback)?

1. **Teacher:** The person formally in charge of the classroom is instructing TS.

2. **Peer (tutor):** Another student is instructing TS.

3. **Aide (adult):** Some adult person other than the teacher is instructing TS (e.g., student teacher, parent volunteer).

4. **Self-instructional materials:** The information and feedback are part of the materials for instructing TS—e.g., special workbooks where the correct answer shows a special color when marked; a non-branching filmstrip with cassette audiotape which solicits TS responses and provides feedback; an instructional game (excluding teacher participation); a puzzle, where the feedback comes from finding the correct solution. The materials themselves are non-adaptive to TS responses, but do provide feedback to TS responses.

5. **Teaching Machine/Tutor:** The information and feedback are presented through a mechanism which is adaptive to the TS—e.g., an interactive computer program which presents information and gives feedback depending on how TS responds to task; a simulation/game on a computer where computer adapts/competes with TS based on his/her responses.
(6) **No instructor:** All of the above means of instruction include a way to monitor directly how well the TS is doing at the time the TS is engaged in the activity and have the capacity to provide feedback or correction immediately (during the activity). If this condition is not met, then there is no instructor, e.g., TS is doing a worksheet independently and does not get any immediate feedback during the task; TS is silently reading and answering questions in a workbook and cannot tell for sure whether his answers are correct.

2.9. **Describe the major task(s) that the instructor does with TS in this activity:** In your own words list the major behaviors in which the teacher engages with the TS during this activity. Be specific. For example, in an oral reading lesson: Instructor calls on children to read in a random manner (TS never knows when will be called on), lets TS try to correct own mistakes first, and if necessary gives hints instead of telling TS the correct word; only tells correct word if TS has tried and failed several times. About every 2-3 paragraphs, instructor asks a question to the whole group about what was just read, and calls on TS twice. Another example, in math seatwork: T. passes our worksheet, gives directions, demonstrates to group how to do the first two problems, and then works at desk generally supervising the seatwork. At least 5 times TS brings worksheet to T's desk for help and T probes and prompts TS on the part TS was stuck on.

Note: There is no need to describe T. tasks with children other than TS, unless the T. behaviors are directed to the students in the group of which TS is a member.

2.10. **Predominant Instructor Activity with TS:** Try to determine which of the following was the predominant specific instructor activity with the TS. Do not be concerned with teacher activities with students other than TS, unless they are directed to the group of which TS is a member.

(1) **Lecturing:** This includes telling, explaining, informing, reviewing, reading to TS about something, etc. TS is primarily expected to listen. Do not code lecturing if instructor is demonstrating or modeling how to do something and is explaining during the demonstration. This would be coded as modeling/demonstration (see below).

(2) **Discussing:** There is verbal interchange between instructor and TS (or group including TS); it is mostly open-ended (usually no right or wrong answers). Instructor may ask questions, make comments, express opinions, express pro's and con's about subject under consideration, and/or answer questions asked.

(3) **Prompting:** The instructor asks questions, solicits TS responses, gives hints/cues and/or reminders, gives feedback/correctives/reinforcement to TS when there is a clearly right or correct TS response expected. Instructor may also give a brief explanation or demonstration based on TS difficulties in responding, e.g.:
- T gives spelling word, calls on random student, listens to him/her spell, gives hint if not correct, acknowledges correct spelling;

- T watches TS do a fractions problem at board, asks him what he is doing at each step, corrects necessary;

- Vocabulary drill--instructor shows card, TS says word, instructor indicates if right or wrong, or tells word if TS is stuck;

- Oral reading--instructor listens to TS read, prompts if TS makes a mistake or is stuck, encourages TS to read (positive reinforcement), asks comprehension questions occasionally.

(4) **Modeling/Demonstrating:** The instructor shows TS (or group of TS) how to do something. Usually this is planned ahead of time (i.e., not based on immediate questions or difficulties S may be having with task), e.g.:

- T at blackboard and shows how to do long division problem, how to diagram sentence;

- T shows how to cut out a snowflake;

- Movie narration and pictures show how to safely handle chemicals and what happens if careless;

- T performs a science experiment on Boyle's law for S's to watch.

- T takes a turn reading aloud during oral reading.

(5) **Testing:** Instructor is formally assessing TS (or group with TS) and S's are aware that it is a test and that some kind of a score, rating, or grade will be assigned based on each S's performance.

(6) **Supervising:** The instructor is not directly interacting with or instructing TS (or the group with TS), but is instead overseeing student task engagement. The instructor does not communicate directly with S's most of the time, although may occasionally answer questions or make comments about student work, e.g.:

- T sitting at desk, grading papers and watching class;

- T walks around class and looks at students' work to see how it's going, occasionally making remarks to some students.
Other: The instructor is engaged in some activity not described above. Specify examples in the blank. Examples:

- T is out of room during current activity;
- T spends most of time on discipline (behavior management) problems during current activity.

Note: If two or more specific teaching activities occur about equally during the time period, then enter multiple codes—e.g., modeling and prompting and supervising would be coded: 436.
2.11. Reading Content Categories Summary

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17. READING RELATED - COMPOSITION/CREATIVE WRITING

18. READING RELATED - OTHER

19. READING BELOW TEST LEVEL
Reading Content Category

Definitions

10. **DECODING/PHONICS** -- learning letter-sound correspondences

A number of different tasks can be used in exercises aimed at teaching decoding; for example:

a. The child could be asked to give the sound associated with a particular letter or group of letters.

b. The child could be asked to read words with a common sound or with a rhyming pattern.

c. The child could be asked to recognize or identify a word containing a particular sound.

d. The child could be asked to write words with a particular sound. (Spelling or dictation are decoding tasks when they focus on a particular spelling pattern.)

e. The child could be asked to match words containing the same sound.

f. The child could be asked to locate all the words in a list or story which have a particular sound or spelling pattern.

g. Even fill-in-the blank exercise can be decoding, if the choice the student must make depends on and teaches accurate decoding.

For example:

Mary put the _________ around the package.

- sting
- bring
- string

What these tasks (and others not listed) have in common is that they pair particular letters or groups of letters with particular sounds and they teach students to make the association.

**Note:** Sometimes, particularly in some basal reader programs, students will read single words where the lesson does not focus on a particular spelling-sound correspondence. This would be coded as reading practice (#14)—sight words. See that category for further discussion.
10.1. **Single Consonants**

Single consonants located in any position in a syllable or word.

Examples: /t/ in tan, bat, ate

10.2. **Consonant Blends and Digraphs**

Common combinations of consonants, located in any position in a syllable or word.

Examples: Blends include st, tr, fl, cr, sp, spr, thr, nd, etc.
as in flower, spread, sand

Digraphs include sh, ch, th, wh as in where, thin, wash.

10.3. **Variant Consonants (c or g)**

Most consonants have one dominant letter-sound correspondence. Some consonants are variable; they have 2 common patterns.

Examples: cat vs. city; goat vs. gentle

Tasks: To fall in this category, teaching tasks should compare and contrast the two decodings of the same letter. The student might have to decide which sound was appropriate in a particular word, or with a particular vowel following the consonant (ca vs. ci).

10.4. **Short Vowels**

Regular short vowel sounds of a, e, i, o, u.

Examples: bat, red, sick, pond, fun

10.5. **Long Vowels**

Regular long vowel sounds of a, e, i, o, u.

Two major types of spelling patterns produce these sounds – final e and digraphs.

Examples: bake; rain
these; mean, feet
fine
pole; boat
huge
10.6. Other Decoding

Besides the basic categories above, other specific decoding patterns might be taught.

Examples: Complex vowel combinations such as diphthongs (oi, ou, oo, aw, etc.)
Sounds of "y" as a vowel (as in cry, candy)
Effects of consonant context on vowel decoding (vowels followed by "r" as in cart or fair; vowels followed by "l", as in tall)
Silent consonants (know, ghost)
Etc.

11.0 WORD STRUCTURE -- analysis and meaning of word parts

11.1 Compound Words

Two meaningful words are combined to form a new word, which takes its meaning from the parts.

Examples: mailbox, goldfish

Tasks: Students might be asked to identify the parts, combine parts to create new words, or identify words which are compounds.

11.2 Root Words and Affixes

Prefixes and/or suffixes added to a root word

Examples: suffixes like -ly, -ful, -less, -able, -er, -est, -tion, etc.

prefixes like un-, re-, mis-, trans-, pre-, ex-, in-, etc.

grammatical endings like -s, -ed, -ing

(Includes spelling changes like doubling the consonant, dropping the final e, or changing y to i. Also includes irregular forms like go, goes, went, gone, going.)

Tasks: Students might have to identify root words, identify affixes in words, or add affixes to words. Includes work on the meaning of affixes and on the correct use of word forms in sentences (John is _______ up the street.)

walk
walked
walking

The student might have to decide which prefix or suffix was needed to create a particular meaning, or the student might have to figure out the meaning of a word from the meaning of the parts.
11.3. Syllables

Conventional or sound-based units rather than meaningful units.

Examples: demonstration = dem on stra' tion (4 syllables)

Tasks: Students might have to identify the first or last syllable in a word, or break a word into syllables, or determine the number of syllables in a word. Included work on locating the accent or stress in a word.

12.0. WORD MEANING -- Understanding the meaning of a specific word or phrase

12.1. Synonyms

Two words which mean about the same thing.

Examples: vibrating ship = shaking ship
discover a cave = find a cave
little = small
everyone = all

Tasks: Students might be asked to name a word that means the same thing as another word. Or students might be asked to match words that are synonyms.

12.2 Pronoun reference

The meaning of a pronoun comes from the noun to which it refers.

Examples: Lisa tried to open the window.
It was stuck.
(What does "it" mean? window)

Tasks: The student might be asked to identify the noun a pronoun refers to (as above). Or the student might be asked to fill in the appropriate pronoun for an incomplete sentence.
(John handed the teacher __________ homework paper.)

her
his
its

12.3. Other word meaning

Meanings of words alone or in the context of a sentence

Examples: Definitions, including using dictionary entries to define words

Defining words from context (using the meaning of a sentence to figure out the meaning of an unfamiliar word or a word with multiple meanings)
John used the term "habeas corpus" in his speech about law.

term means

A. a period of time
B. an assigned time to serve
C. a word with an exact meaning
D. a condition or requirement

Using words in sentences (writing a sentence that shows the meaning of a new vocabulary word)

Antonyms (words opposite in meaning)

Figurative Language (recognizing the meaning of a word or phrase used in a nonliteral sense, including simile, metaphor, and idiomatic expressions)

"John laughed his head off." means "John laughed a lot."

Crossword Puzzles

Classification of words (apples, oranges, and peaches are fruit).

Tasks: The student might be asked to give the meaning of a word, match a word with its definition, or write a sentence using a particular word.

13.0 COMPREHENSION - Understanding of ideas expressed in written material, including understanding of literature and understanding of written material in the content areas (science and social studies)

The story below will be referred to in the examples of the comprehension categories. Time spent reading the story would be coded in Reading Practice. Time spent answering questions, writing about, or discussing the story would be coded in Comprehension.

SAVING THE SEALS

Who owns the sea? The ships of all countries sail the open seas. Not long ago, all countries could fish and hunt in the ocean as they pleased. Now, the countries using the sea must work together to protect the sea's animal life.

In 1870, there were millions of valuable fur seals in the Bering Sea. Ships came from all parts of the world to kill them. Men wanted the animals' fur and the oil from their bodies. By 1910, only about 130,000 seals were left. Even the hunters knew that something had to be done or the seals would disappear.
Four countries owned land near the seals' northern home. In 1911, these countries began plans to control seal-hunting. The governments of Japan, Russia, Canada, and the United States agreed to kill no more seals in the open seas. Because they wanted to protect mother seals and their young, they agreed that only male seals without mates could be killed. Money earned from the skins and oil of these seals was to be divided among the four governments.

Today, large herds of seals swim in the Bering Sea again. By working together, four countries saved the seals in the sea they share.

13.1. Verbatim (no rephrasing)

Understanding and recall of information exactly as stated in the text.

Examples: 1. Where do large herds of seals swim today? (in the Bering Sea)
2. Which governments agreed to kill no more seals in the open sea? (Japan, Russia, Canada, U.S.)
3. Why did they agree that only male seals without mates could be killed? (to protect mother seals and their young)

13.2 Translation (paraphrase)

Recognizing ideas stated in different words; recall of information when ideas are restated; rephrasing of ideas in other words.

Examples: 1. Which countries joined in the agreement to limit seal killing? (Japan, Russia, Canada, U.S.)
2. Describe in your own words what the countries agreed to do.

13.3 Inference/Synthesis

Synthesis of information from different points in a text; understanding of ideas implied by a text; using background knowledge or experience to interpret or extend the ideas in a text; drawing conclusions or predicting outcomes.

Examples: 1. Why were the seals hunted?
   a. People wanted to eat seal meat.
   b. Their fur and oil were valuable.
   c. The seals were eating all the fish.

2. The story does not say so, but it makes you think that
   a. hunters used seal oil on their bodies
   b. seals have little value for hunters
   c. all the seals might have been killed

3. What would happen if only 2 of the 4 countries joined the agreement?
13.4 Identifying main ideas

Recognizing the topic of a passage; identifying and understanding the central or most important ideas being communicated.

Examples: 1. On the whole, this story is about
   a. Russia and Canada
   b. protecting seals
   c. hunting in the Bering Sea

2. What message is the author trying to get across? (It is important to protect animals. Countries need to work together.)

Besides answering questions, this content category includes work on outlining a passage, or recognizing the structure and organization of a passage (superordinate and subordinate elements).

13.5 Evaluation of fact and opinion

Critical analysis of statements and the basis for their acceptance; identifying fact and opinion statements. Also includes evaluation of the qualifications of a speaker/writer and understanding how "loaded" words convey opinions.

Examples: Which statement is a fact rather than an opinion?
   a. Seals should be protected.
   b. All the seals very nearly died.
   c. In 1910, only about 130,000 seals were left.

13.6 Other comprehension

Comprehension of written material which does not fit one of the specific categories above. Also includes situations where a comprehension activity mixes several types of comprehension so thoroughly that it would be impossible to separate the time.

Examples: Following directions

Application of reading skills to real-world materials like signs, menus, TV schedules, etc.

14.0. READING PRACTICE - Practice in reading

Note: All reading activities involve the act of reading. Use the Reading Practice category only for activities where students spend time just reading. We will automatically assume that time in specific skills (decoding, word structure, word meaning, or comprehension) includes some reading practice as well.
14.1. **Sight words**

General practice at reading single words. No particular decoding focus. Students must integrate a variety of decoding skills in order to read a word on sight.

Tasks: Students read these words at the beginning of a lesson:

- slippers
- bought
- hurry
- etc.

Teacher reads a word and the students must circle it:

- watch
- was
- what
- liver
- lives
- silver

Any word reading task where there is no intent to practice specific decoding patterns.

14.2. **Oral reading of text**

Individual or choral reading of stories by students.

Tasks: Reading circle where students take turns reading aloud from a story.

14.3. **Silent reading of text**

The student reads a story to himself.

Tasks: Students have time for independent reading. Each student reads to himself. Students might go to the library and read. A student might read when he finishes other work early.

14.4. **Reading in content areas**

Reading science or social studies material (oral or silent)

Tasks: The student reads silently in the social studies book. The students take turns reading aloud from the Weekly Reader.

14.5. **Listening while reading**

The student listens while he reads in an accompanying text.

Tasks: The student must be simultaneously reading and listening. He could be listening to a tape or record of a story and reading along. Includes music if the student is both reading and singing.
15.0. **READING RELATED -- SPELLING --** matching word sounds with particular configurations of letters

**Tasks:** The teacher might read a word or sentence and have the students write it. Students might have to decide whether or not a word is spelled correctly. Includes work on homonyms (like "to", "too", "two", or "peace", "piece") and their correct use in sentences. Some lessons may focus on particular patterns in letter-sound correspondence (like sounds of the letter "y", or words with silent "e").

16.0. **READING RELATED -- GRAMMAR --** understanding sentence structure and grammatical form.

**Examples:** Capitalization, punctuation, parts of speech, diagramming sentences

**Tasks:** Many possible activities involving grammatical concepts.

17.0. **READING RELATED -- CREATIVE WRITING --** students make up their own stories and write them.

**Tasks:** The teacher might have all students write a story about summer vacation. Or students might write their own endings to a story they have been reading.

18.0. **READING RELATED -- OTHER**

18.1. **Study skills**

Learning and using skills that help the student acquire knowledge through reading.

**Examples:** Dictionary skills, alphabetization, table of contents, using the index, using the encyclopedia, card catalog, finding books in the library.

18.2. **Other**

Other activities which are related to reading.

**Examples:** Foreign language.

Reading maps or graphs.

18.3. **When 2 or more of the above are emphasized, then use #18. Be sure to note the categories in comments.**
19.0. READING BELOW TEST LEVEL -- copying or imitating

Examples: Copying, where the student directly copies letters, words or sentences. Includes penmanship.
A common response format in workbook pages, especially in earlier grades, is to ask the student to fill in the blank to complete a sentence. To perform the task the student must read the sentence parts that are given and understand their meaning in order to recognize the element that would complete the thought. He must use the context as a set of clues which define the nature of the missing piece. Understanding the sentence framework is a comprehension process. But the task also involves selecting the best word(s) to fill the blank, and the nature of the choices is critical. To code the content of items in a context clues format, consider the distinctions the child must make in order to select the correct alternative.

The examples below show some of the different ways a context clues format can be used:

**Decoding:**

Jane ate a red candy  
  cane/can

Here the student must not only understand the sentence but also know the role of final e in decoding vowels. Without this knowledge of decoding patterns, the child might know the word he wants to fill the blank but still select the wrong alternative. The purpose of the exercise is to practice decoding rules.

**Word Structure:**

Tim went  
  skip  
  skips  
  skipping

This exercise teaches correct use of grammatical endings.

**Word Meaning:**

Susan ran to her house. Then  
  she  
  he  
  it

This requires pronoun reference.

Some animals have snouts. They are really long  
  ears  
  mouths  
  noses
Because the ocean roars, we need to _______ to be heard.

  talk
  shout
  whisper

In the two examples above, the emphasis is on the meaning of the missing word. The student must consider the semantic distinctions among the choices in order to select the word with the best meaning to complete the sentence.

Choose from these words to complete the sentence below:

  lazy  dozing  buzzed  dizzy  grazing

Soon, a bee ________ around the colt's head.

In this example the word choices all have the letter "z". But this decoding element is a constant factor; students don't have to focus on the decoding in order to complete the sentence. Sentence completion focuses on selecting the word with the best meaning. (Note: Time spent reading the word choices and talking about the sound of the letter "z" in these words would be coded as Decoding.

Comprehension:

After reading the story of the Little Red Hen, the student must complete this sentence:

  The fox lived in a house made of _________.

  straw
  wood
  stones

The purpose of questions like this is to check story comprehension; the correct answer depends on having read the story. This question assesses understanding of event data (verbatim).
2.12. Math Content Category Summary

20. ADDITION/SUBTRACTION (NO REGROUPING)
   - standard short form
   - basic facts
   - speed tests

21. ADDITION/SUBTRACTION (WITH REGROUPING)
   - standard short form
   - basic facts
   - speed tests

22. COMPUTATIONAL TRANSFER (Properties, # patterns, missing addends, number sentences with inequalities)

23. PLACE VALUE/NUMERALS (whole numbers)

24. MULTIPLICATION
   - basic facts
   - speed test
   - multiplication algorithm

25. DIVISION
   - basic facts
   - speed test
   - division algorithm

26. FRACTIONS/DECIMALS

27. SPATIAL APPLICATION
   - linear measurement
   - geometry (perimeter, area, # pairs, lines/figures)

28. VERBAL APPLICATION
   - word problems

29. MATH RELATED

30. MATH BELOW TEST LEVEL
Math Content Category Definitions

20. ADDITION/SUBTRACTION—NO REGROUPING

Learning the basic addition and subtraction facts. Finding the sum or difference of problems which do not require the renaming of 10 ones as 1 ten or 1 ten as 10 ones (i.e., no "carrying" or "borrowing").

20.1 Basic facts: Basic addition facts are the sums of two single digit addends up through 9 + 9. The basic subtraction facts are the inverses of the addition facts and therefore include facts up through 18-9.

20.2 Non-regrouping problems in addition: Sums of a single digit and a multiple digit addend or two or more multiple digit addends which do not require the renaming of 10 ones as 1 ten.

\[
\begin{array}{ccc}
10 & 23 & 547 \\
+ 5 & + 46 & + 201 \\
\end{array}
\]

Includes column addition without regrouping.

\[
\begin{array}{ccc}
6 & 20 & 21 \\
4 & 30 & 13 \\
+ 5 & + 10 & + 15 \\
\end{array}
\]

20.3 Non-regrouping problems in subtraction: Finding the difference between a single digit and a multiple digit number or the difference between two multiple digit numbers which do not require the renaming of 1 ten as 10 ones.

\[
\begin{array}{ccc}
27 & 28 & 532 \\
- 7 & - 14 & - 420 \\
\end{array}
\]

Note: Problems in this category can be presented in a variety of formats.

The problem may be laid out horizontally or vertically:

\[
\begin{array}{ccc}
2 & 3 & \\
+ 3 & - 2 & 2 + 3 = \underline{5} \quad 3 - 2 = \underline{1} \\
\end{array}
\]
Pictoral representation may be used to help the students understand the basic processes of joining or separating sets and/or as an aid in carrying out the computation involved:

\[ 2 + 3 = \boxed{} \]

\[ 3 - 2 = \boxed{} \]

In all of the examples above, the primary task is to find the sum or difference between two numbers when both of those numbers as well as the applicable operational sign are given.

However, there are situations where instructional algorithms or processes involving place value concepts are used in the teaching of these same computational skills and when this occurs the instruction should be coded under category #23.

There are other situations which require more than the straight-forward computation of a sum of difference (but do not involve place value) and these situations are discussed in the Computational Transfer Section (#22).

21. ADDITION/SUBTRACTION—REGROUPING

Addition problems which require the renaming of 10 ones as 1 ten ("carrying") and subtraction problems which require the renaming of 1 ten as 10 ones ("borrowing"). Here we want to include only the regrouping problems which are presented in the standard computational algorithmic format, also known as the short form.

\[
27 + 3 = \boxed{32} \\
\begin{array}{c}
18 \\
\underline{+ 16}
\end{array} \\
\boxed{44}
\]

\[
\begin{array}{cccc}
13 & 8 & 16 & 15 \\
\underline{13} & \underline{26} & \underline{40} & \underline{40}
\end{array}
\]

\[
\begin{array}{cccc}
26 & 9 & 15 & 15 \\
\underline{26} & \underline{32} & \underline{44} & \underline{44}
\end{array}
\]

This category is parallel to category 20 in that the student is given two numbers and told to find their sum or difference but in this case the problems also require regrouping. The general guidelines on format in category #20 also apply to this category.

22. COMPUTATIONAL TRANSFER

Tasks which require the student to recognize and apply some of the operational concepts and patterns within our number system. The student must understand and use the operations which underlie computation, but in a format which involves more than straight-forward computation. Includes:
22.1 **Properties:**

1. Commutative property of addition and multiplication.
   
   \[ 3 + 2 = 2 + 3 \]
   \[ 2 \times 3 = 3 \times 2 \]

2. Associative (grouping) property of addition.

   \[ 2 + (3 + 5) = (2 + 3) + 5 \]


   Identity element of addition: \[ 18 + 0 = 18 \]

4. Distributive property.

   \[ 2 \times (3 + 2) = (2 \times 3) + (2 \times 2) \]
   \[ (12 + 6) ÷ 3 = (12 ÷ 3) + (6 ÷ 3) \]

22.2 **Number Patterns:** Tasks which promote the student's search for and recognition of the various patterns which can be found among numbers.

Examples:

1. Counting by 2's (odd and even numbers).
2. Counting by 5's, 10's, 20's, etc.
3. Functions - discovering or applying a function rule like add 3, subtract 2, etc.

   a. Rule is given: Add 4 to each number in top row:

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<th>0</th>
<th>2</th>
<th>5</th>
<th>7</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   b. Student must discover and apply the rule to complete the pattern.

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<thead>
<tr>
<th>1</th>
<th>3</th>
<th>8</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6</td>
<td>11</td>
<td>?</td>
</tr>
</tbody>
</table>

   7, 5, 3, ?

   \{ (1,2), (2,4), (3,6), (4,?) \}
22.3 Missing Addends - Open Sentences: Number sentences in which the sum or difference is given and one of the addends or numbers is unknown.

Examples:

\[
\begin{align*}
\square + 3 &= 7 \\
\square - 5 &= 5 \\
4 + \square &= 7 \\
5 - \square &= 2 \\
\square - 3 &= 4 \\
7 - \square &= 3 \\
\end{align*}
\]

22.4 Number Sentences with Equalities and Inequalities - Includes only those number sentences that involve computation plus the use of \(>, <, =, +, -\).

\[
\begin{align*}
7 - 6 &\leq 1 + 3 \\
7 &\geq 4 - 3 \\
10 - 10 &\geq 15 + 5 \\
7 &\triangleq 2 = 5 \\
8 &\triangleq 3 = 11 \\
\end{align*}
\]

This category does not include the use of inequality signs in numerical comparisons. i.e.,

\[
\begin{align*}
27 \otimes 26 \quad \text{This should be coded as \#23 (place value/numerals)} \\
127 \otimes 126 \\
\end{align*}
\]

22.5 Factors and Multiples: The study of common and least common multiples, common factors, sets of factors, prime numbers, and prime factorization.

Examples:

1. \(6 \times \square = 42\) 
2. \(12 = 2 \times 2 \times 3\)
3. Name the multiples of 2, less than 20.
23. PLACE VALUE/NUMERALS

23.1 Place Value/Numerals - Place value involves the concept that a digit has three meanings. It's face value (the meaning it has wherever it is used), it's place value (the meaning it takes from it's place in a numeral), and it's total value (which is the product of the first two values). In the numeral 45, the 4 has a face value of four, a place value of ten, and a total value of forty. Teaching place value will involve expanded and compact notation, identification of the one's, ten's, or hundred's place, and naming the number of tens (or ones, etc.) in a numeral.

Numerals includes understanding the order of the counting numbers and evaluating the sequential position of one numeral in relation to another. Comparing and evaluating numerals will involve place value concepts.

Examples:

A. Place Value:

1. How many tens in 75?
2. Which number is in the one's place?
3. 6 tens and 2 ones = 60 + 2 = 62
4. 155 = 100 + 50 + 5
5. Use of manipulatives or pictures to teach numerical structures.

![Grids representing 2 hundreds, 3 tens, and 4 ones]

We write 234

B. Numerals

1. Writing the missing numerals.

![Grids representing 46, 49, and a blank space]

2. What number comes before, after, or between?
4. Practice in reading numerals up through millions.
5. Understanding the use of commas to set off the periods (e.g., 1,575,231).
23.2 Addition/Subtraction With or Without Regrouping – Instructional Algorithms With Place Value Transformations:

In our base 10 number system the understanding of place value is essential to the learning of computational skills. With this in mind, curriculum materials often include instructional algorithms or processes which combine place value concepts along with practice in computation. These processes may involve expanded notation or the designation of tens and ones. Some common (depending on text) instructional algorithms are:

\[
\begin{align*}
14 &= 10 + 4 \\
+14 &= 10 + 4 \\
20 + 8 &= 28
\end{align*}
\]  
(Use of Expanded Notation)

\[
\begin{array}{c@{}c@{}c}
& 1 & 6 \\
+ & 1 & 4 \\
\hline
& 3 & 0
\end{array}
\]  
(Designation of ten's and one's place)

\[
\begin{align*}
14 \\
+ 14 \\
\hline
8 \\
20 \\
28
\end{align*}
\]  
(Long form with partial addends)

24. MULTIPLICATION

24.1 Multiplication – Basic Facts: Multiplication with two 1-digit factors. Also known as times table up through $9 \times 9$.

24.2 Multiplication – Speed Tests: Timed tests in the basic multiplication facts. May also include speeded flash card drill which is specifically aimed at increasing automaticity.

24.3 Multiplication Algorithm: Multiplication with one factor of two or more digits, i.e., all multiplication above the basic facts.

25. DIVISION

25.1 Division: Division of whole numbers. All levels of difficulty. Includes speed tests in division.
26. FRACTIONS/DECIMALS

26.1 Fractions - Recognizing and identifying a fractional part of a set, region, or line:

Examples:

a. Draw a ring around 1/3 of the trees.

b. What part of this region is shaded?

26.2 Fractions: Computation with fractions including the recognition and identification of equivalent fractions.

26.3 Fractions: Converting decimals into fractions (e.g., .625 = 5/8)

26.4 Decimals: Place value (\( \frac{1}{100} = .01 \), .5 > .25); arithmetic operations with decimals (+, -, x, ÷).

27. SPATIAL APPLICATION

27.1 Linear Measurement - Measuring the length, width, or height of objects, lines, or pictures.

27.2 Geometry - Perimeter: Computing the perimeter of a polygon using standard or arbitrary units of measure.

27.3 Geometry - Area: Computing the area of a polygon using standard or arbitrary units of measure.

27.4 Geometry - Number Pairs: Identifying number pairs on a number plane.

Example:

```
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<td>Q</td>
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</tbody>
</table>
```

What is the number pair for point Q?
27.5 **Geometry - Lines or Figures:**

Recognizing and identifying common lines and plane figures. Includes angles, parallel and perpendicular lines, parallelograms, rectangles, squares, and right triangles. Does not include work with solid figures like spheres, rectangular prisms, etc.

28. **VERBAL APPLICATION**

28.1 **Word Problems:** All types of word problems including word problems with graphs. The coding of word problems is given priority over the specific computation required by the problems. Therefore, regardless of the computation, time on word problems is coded under word problems.

29. **MATH RELATED**

29.1 **Money - Identifying coins, the sum of a set of coins, and equivalent values of coins. Using coins for practice in addition, subtraction, and understanding the decimal system.**

29.2 **Other Concepts:** Other concepts and applications not covered by codes 20 through 28.

Examples:

- Volume
- Solid Figures
- Liquid or Weight Measures
- Statistics and Probability
- Constructing Line and Bar Graphs
- Set Theory, Set Diagrams, Logic
- Plane Math with Decimals
- Exponents (concepts of)
- Averages (concepts of)

29.3. **When 2 or more of the above math content areas are clearly emphasized in the task, then use code #29. Be sure the specific categories in the comments.**

30. **MATH BELOW TEST LEVEL**

30.1 **Developmental Activities - Activities which do not involve computation but do promote the development of concepts which are considered preliminary to the understanding and use of operational concepts. Includes:**

A. Review of basic number concepts such as learning the number name for a set of objects less than 10, learning to count and write the numbers from 0 to 10, one to one matching and recognition of equivalent sets.
B. Activities which provide experiences (most often with concrete materials) in recognizing likenesses and differences, sorting, ordering, comparing, and matching.

Examples:  
- Attribute blocks or games
- Pattern blocks
- Tangrams
- Geoboards
- Geoblocks
- Soma cube puzzle
2.13. Content Summary: Other Academic

40. PHYSICAL/BIOLOGICAL SCIENCES
   - Biology
   - Physics
   - Chemistry

41. SOCIAL SCIENCES
   - Geography
   - History
   - Social Studies
   - Current Events

42. FOREIGN LANGUAGE
   - Spanish
   - German
   - French

2.14. Content Summary: Non-Academic

50. ART

51. MUSIC

52. TECHNOLOGICAL ARTS
   - Industrial Arts
   - Home Economics

53. PHYSICAL EDUCATION (Supervised)

54. PERCEPTUAL DEVELOPMENT

55. MANAGEMENT/PROCEDURAL

56. RECREATION/BREAK

57. PERSONAL EXPERIENCES/FEELINGS

58. OTHER ACTIVITY
Other Academic Content Category Definitions

40. PHYSICAL/BIOLOGICAL SCIENCES—An activity primarily involved with knowing about matter, energy, plants and animals.

Examples: a. Physics, chemistry, geology, anatomy, meteorology, biology, astronomy.

41. SOCIAL SCIENCES—An activity primarily concerned with humans and their living together.

Examples: a. Social Studies,
   b. Geography (human),
   c. Sociology, psychology,
   d. Current events, government, politics,
   e. History,
   f. Economics,
   g. Political science, law,
   h. Anthropology,
   j. Art history,

42. FOREIGN LANGUAGE—An activity primarily involved with reading, writing, or conversing in other than the native tongue.

Examples: a. Spanish,
   b. French,
   c. Russian,
   d. Latin,
   e. Turkish,
   f. Hebrew ...

Note: If any math or reading is involved in these other academic activities, be sure to code the specific math or reading category in addition to the other academic category.

50. ART—An activity primarily involved with visual representation for aesthetic purposes.

Examples: a. Sketching, painting, sculpturing,
   b. Film-making,
   c. Silk-screening, tye-dye,
   d. Jewelry making,
   e. Art appreciation.
   f. Drawing, coloring
   g. Making valentines, Christmas cards, room decorations, etc.
51. MUSIC—An activity primarily involved with listening to, making or appreciating organized sound.

Examples: a. Singing, chanting, composing, improvising,
           b. Playing instruments,
           c. Music appreciation,
           d. Rhythm bands.

52. TECHNOLOGICAL ARTS—An activity primarily concerned with how to do an occupationally or vocationally related skill.

Examples: a. Wood-crafting,
           b. Bookkeeping,
           c. Computer programming,
           d. Cooking, sewing, decorating,
           e. Gardening,
           f. Shop,
           g. Electrical repair,
           h. Knitting, needlework, macrame.

53. PHYSICAL EDUCATION—A supervised and organized activity whose primary intent is bodily exercise and/or gross motor development.

Examples: a. Swimming,
           b. Dance,
           c. Gymnastics,
           d. Calisthenics,
           e. Team sports.

54. PERCEPTUAL DEVELOPMENT (Training)—An activity primarily oriented towards sensory and motor (fine) development.

Examples: a. Tracing sand paper letters, tracing,
           b. Clapping, snapping,
           c. Cutting, pasting,
           d. Mazes,
           e. Eye-hand coordination (following a finger)
           f. Basic (primary) visual discrimination skills (colors, shapes).

55. MANAGEMENT/PROCEDURAL—Conducting class business unrelated to any instructional activity.

Examples: a. Collecting milk money,
           b. Taking attendance, lunch count,
           c. Making arrangements for a field trip,
           d. Filling out administrative forms,
           e. Morning announcements,
           f. Being sent to principal's office,
           g. Fire drill,
           h. Cleaning up room, stacking chairs.
56. **RECREATION/BREAK**—Any recreational or free period.

Examples: 
- a. Recess,
- b. Unstructured P.E. (like recess),
- c. Lunch, milk breaks,
- d. Non-instructional games,
- e. Attending school concert, assembly, basketball game
- f. Class party.

Don't code as break: brief unscheduled trips to restroom, drinking fountain, etc., unless there is a specified period of time for all students to do this.

57. **PERSONAL EXPERIENCES/FEELINGS**

57.1 **Personal Experiences**—Primary focus is on the telling of a past experience of the learner or teacher. (Only code if it is clearly the focus of the activity, not just in passing.)

Examples: 
- a. Telling about personal experiences at home or elsewhere,
- b. Show and tell,
- c. Talking about experiences on a recent field trip.

57.2 **Personal Feelings**—The primary focus is on current emotions of the learner or teacher; or feelings about some personal problem he/she now owns. (Only code if it is clearly the focus of the activity.)

Examples: 
- a. Affective education programs,
- b. Discussion of a recent traumatic or exhilarating experience (death or injury of a close person, winning a tournament)
- c. Discussion of feelings/attitudes about classroom problems (e.g., rules, discipline).

58. **OTHER ACTIVITY**—Some organized instructional activity that cannot be clearly coded by any of the above content categories. Be sure to describe.
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<thead>
<tr>
<th>TIME</th>
<th>1. LEARNER MOVES</th>
<th>INSTRUCTOR MOVES</th>
<th>3. FOCUS</th>
<th>NOTES</th>
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3.1 Definitions of Real-Time Coding Categories for Target Student, Instructor and Focus

These categories are to be used for coding on the Real-Time Sheet only for educational activities which require the target student to engage in any reading or mathematics related tasks—even though the subject may be officially called something else (e.g., science, social studies, music).

Learner Moves (Target Student [TS] only)

EW: ENGAGED-Written

TS makes a substantive non-oral (usually motoric) reading or math response that allows the observer to determine engagement and task difficulty level directly.

Examples: - writing answers to math or reading problems/questions
- measuring in math
- using manipulatives in math (e.g., cuisenaire rods, abacus, pocket calculator)
- writing spelling words
- drawing a geometric figure in math
- capitalizing and punctuating a sentence on worksheet
- circling an answer on a language arts task

EO: ENGAGED-Oral

TS makes a substantive oral response in math or reading that allows the observer to determine engagement and task difficulty level directly.

Examples: - oral reading
- answering a substantive question in reading/math
- asking a substantive question in reading/math
- making a relevant comment in reading/math
- singing while reading lyrics

Note: EW and EO are not used for TS responses concerning the directions or structure of the task—see ED below. EW and EO must pertain to the substance of the task itself.

EC: ENGAGED-COVERT

TS is oriented to the substance of a reading/math task, but is showing no observable response that allows the observer to determine engagement and task difficulty level directly.
Examples: 
- silently reading and listening to another student read orally
- watching T demonstrate how to do a math problem at board
- listening to questions and answers about a story that was read
- silent reading of text
- pondering over a story problem in math
- listening to T explanation on suffixes and prefixes

Note: EC is not used for TS behavior related to the directions or structure of the task—see ED below.

ED: ENGAGED-DIRECTIONS

TS is engaged in listening to, reading, asking about, or carrying out directions that do not involve the academic substance of the reading/math task itself. (The response mode is not differentiated here.)

Examples: 
- TS is writing name on top of paper and numbering lines for spelling words to be given.
- TS is listening to T give the next math assignment.
- TS asks a question about what s/he's supposed to do on the reading assignment.
- TS is copying directions from the board for the math seatwork.

NI: NOT ENGAGED-INTERIM

TS is involved with some activity that is part of a reading/math task, but does not involve the substantive content or directions of the task.

Examples: 
- sharpening pencil
- hands in paper
- getting books, relevant materials
- opening book, finding page
- checking off on a chart items completed during task
- passing out papers

Ground Rule: Code engagement over non-engagement if both occur together—e.g., if T is giving directions and TS is listening while also finding his/her pencil and page in the math book, code ED, not NI.

NW: NOT ENGAGED - WAIT

TS is not engaged in a reading/math task because s/he is waiting for the teacher or another student.

Examples: 
- waiting for help from T
- walking up to T's desk and waiting for his/her paper to be graded
- waiting for T to return to the group that TS is in and which cannot continue without T
- waiting for T or another S to pass out papers
- waiting for T to write problems on the board
- waits for T to give next spelling word
- TS has finished current part of task and is waiting for next part

Note: If TS is NW then code instructor move as NULL.

NO: NOT ENGAGED - OFF TASK

TS is not involved in the reading/math task in any way, not even in a peripheral part of the task.

Examples:  
- Socializing
- Daydreaming
- Disruptive behavior
- Doodling, passing notes
- Shuffling aimlessly through text pages
- Getting a drink, going to restroom

Note: Teacher disapproval is not a necessary condition for NO.

Ground Rule: TS engagement in reading/math always takes priority over non-engagement in some other task. We always want to know when TS is engaged in reading or math, regardless of what other intentions the teacher may have. For example, suppose the "official" activity is art—all the students are expected to work on their collages during the art period, but TS decides instead to read a book from the library. From the point of view of the art activity, TS is NO (not engaged-off task). However, TS is engaged in reading (EC). In this case, the observer should code the content on the educational activity sheet as reading practice (#14) (not art), and code TS engagement from the point of view of the reading activity (EC).

Instructor Moves

General Note: The instructor is usually the classroom teacher, but need not be. Another student could be tutoring TS—thus the peer is the instructor. The instructor could also be an aide, a teaching machine, or even the curriculum materials if they provide feedback to TS on his/her responses. You will code who the instructor is on the educational activity sheet. You will code the instructor move on the real-time coding sheet, regardless of who or what the instructor is, only when:
1. The instructor move is relevant to the reading or math content; AND

2. The instructor move is relevant to the TS move coded for that event.

ACADEMIC MONITORING

An instructional move that consists only of looking at or listening to a TS response during a reading/math task. It must be directed toward the substantive, academic responses of the TS. (Observation of TS task engagement, where the instructor is not in a position to evaluate how well TS is doing on the task, is not AM—it is null.)

Examples: - T stops at TS's desk and looks at his/her work (written responses during math seatwork)
- T watches TS work math problem at board.
- T looks at TS's spelling words during spelling test.

Note: Suppose TS is engaged in math seatwork (EW), and T is monitoring some other student's seatwork responses. This would not be coded AM, because the instructor move is not relevant to the TS move. In this case the instructor move is NULL, with respect to TS's move.

ACADEMIC FEEDBACK

The instructor informs TS that TS's written/oral response in math/reading was correct or incorrect, or provides TS with the correct response but no explanation is given as to why it is correct.

AF can be implicit as in TS oral reading, when T is listening—by not stopping TS, T is implying that TS is reading correctly. Or flash card drill in math, when T goes to next card without comment it implies that TS was correct on the last one.

Examples: - T says to TS, "Good. That's right."
- T says to TS, "No, the answer is 53."
- TS looks at T marks and corrections on his spelling test (only code AF when TS is actually looking at the written feedback).
- A peer is grading TS's math quiz (students have traded papers and T is going over the answers with class), and peer says to TS; "You got that one right."
- TS is checking his math problems against answers in back of book (or on another sheet)
- Another student is reading orally and TS is silently reading (following along).
- TS is listening to audiotape/record and silently reading along
- TS is in group singing and reading lyrics, and if T can be heard above the rest, this is AF (to the group)
- T is going over answers to reading assignment so that TS can follow along, and TS is correcting his/her own paper
- T listens to several of TS's oral answers and only stops TS if TS makes a mistake (i.e., it is implied that TS is correct by lack of T interruption)

**AQ: ACADEMIC QUESTION**

The instructor is asking TS to provide a written or oral answer to a substantive reading/math problem or question.

Examples: - Spelling—TS is required to spell a word aloud or on paper.
- T reads a passage aloud from which TS is to find a certain type of word.
- A peer shows TS a flash card and TS is supposed to respond.
- T gives a test orally to class on a problem x problem basis—i.e., "No. 3. Which countries were concerned about the seals?" (in a story just read silently).

**XN: EXPLANATION - NEED**

The instructor is giving an explanation that is provided to satisfy a clear and immediate need for TS help with a substantive reading/math problem.

Examples: - TS is unable to do task or has done it wrong, and T reacts to this by explaining (note if TS is confused about directions, code the T clarification as SD—see below).
- TS asks for help on a problem and T provides it.
- Most of the class, clearly including TS as well, are confused about how to do a problem, so T gives an explanation to the whole class (group focus).

**XP: EXPLANATION - PLANNED**

The instructor gives explanations on substantive content in math/reading that do not pertain to an immediate academic need of the TS.

Examples: - T is lecturing on pronoun reference.
- T is demonstrating a long division problem.
- TS is watching a movie/TV filmstrip where reading/math instruction is being given (e.g., Sesame Street).

**Note:** If TS is listening to an explanation based on an immediate need of another student, but TS clearly does not have that need, code XP for TS, not XN.
SD: STRUCTURING - DIRECTING

The instructor makes statements about goals or objectives and/or gives directions on a math/reading task.

Note--the statements do not involve the substance of the reading/math content, but are about what the students are to do on the task or why they are to do it.

Note also--any instructor questions, feedback, explanations, monitoring, etc. that have to do with the structure or directions about the task are coded as SD (not XP, XN, AF, AM).

Examples: - T says, "Open your math books to page 72, and do problems 3, 5, and 8".
- T says, "We need to learn how to spell correctly, so that other people can read what we write".
- T goes over the schedule of activities for the language arts period.
- T briefly reviews the part of the story covered the previous day before beginning an oral reading activity: "We left off the story yesterday when Sammy couldn't find his mother at the grocery store. We were on page 49, the second paragraph. Has everybody found his or her place? Who would like to read first?"

TF: TASK ENGAGEMENT FEEDBACK

The instructor moves to control inappropriate TS task engagement or to praise positive TS task engagement in math/reading. (This is never used when instructor is giving feedback relating to the content of TS's academic responses.)

Examples: - To TS: "Get back to work."
- To TS: "I see you're really working hard on this reading assignment."
- To group including TS: "Have you finished your math assignment yet?"
- To TS: "Stop that (talking) and finish your spelling words!"
- To group including TS: "I see that everyone's almost finished, and we have 10 minutes left in the math period!"
- To TS: "Shh! I don't want to have to remind you again to be QUIET."

NU: NULL

The instructor move during a math/reading task not relevant to the TS move coded for that event OR it is not relevant in any way to the reading/math task itself.

Examples: - TS is EW on math worksheet at seat and instructor is grading papers at her desk.
- TS is NO on reading assignment, and instructor is individually helping another student.
- Instructor is out of room and TS is EC in reading science book.
- Instructor is working with reading group of which TS is not a member, and TS is copying spelling words at seat.
- During oral reading group, T interrupts and says, "Oh, I forgot to take lunch count."
- During math seatwork, T says, "Wasn't that an exciting ball game last night?" (TS is listening to T). (This would be coded NO and NU).

Sometimes it can be confusing as to whether to code NU or one of the other instructor moves. For example, suppose T is at board demonstrating a long division problem, but TS is whispering to a friend (off-task). T's behavior is not relevant to TS's but it is relevant to the task. Since TS is clearly supposed to be listening to T, this would be coded NO and XP.

On the other hand, suppose that during math seatwork, TS is EW, T starts to talk to the class about last night's game, but TS ignores T and continues to work. This would be coded EW and NU.

Or, suppose in math seatwork TS is off-task and T says to TS, "Be quiet and finish your worksheet." In this case you would code NO and TF. The instructor move is relevant to TS's non-engagement in math.

Thus, there are two questions to answer:

1. Is the instructor move in a math/reading activity intended for TS engagement at this time? (If not, code NU for the instructor).

2. If so, then is the instructor move related to the substance or directions of the TS math/reading task OR to TS's engagement in that task? (If not, code NU for the instructor. Otherwise, code accordingly as AM, AQ, AF, XN, XP, SD, or TF.)

What about this situation? Suppose T is demonstrating long division at the board and TS is suppose to watch, but is instead reading a library book. First, do we code TS as EC in reading or NO in math? The ground rule is to code TS engagement in math/reading over non-engagement. Thus, the content category should be coded as Reading Practice (# 14), and the TS move as EC. Since, the instructor's move is unrelated to TS's engagement in reading, it is coded as NU.

Focus of Instructor

Here we want to distinguish between instructor moves directed specifically to TS vs. those directed to someone else in the group (of which TS is a member) or to the group as a whole. The focus is coded in addition to the type of instructor move (see above).
TS: TARGET STUDENT IS FOCUS

The instructor move is clearly and specifically directed to the TS.

Examples: - TS is having difficulty with a math problem and T is giving TS individual help.
- T says to TS in oral reading after a TS miscue, "Look at the first two letters. What sound do they make?"
- T is looking over TS's shoulder while monitoring seatwork.
- T tells TS to stop talking and get back to work.
- T tells TS, "That's correct. Go on."

GR: GROUP IS FOCUS

The instructor move is directed toward another student in the group (of which TS is a member) or to the group as a whole.

Examples: - To reading group: "Who can tell me what happened to Bobby (in the story just read)?"
- To another S in reading group who has made a miscue (and TS is supposed to listen): "Look at the first two letters. What sound do they make?"
- Whole class is going over spelling test and T says, "The first word is spelled, B-E-A-U-T-I-F-U-L."
- T is demonstrating long division at board to whole class.
- T is correcting another S's mistake on math problem and TS is listening and watching.

Note: If the instructor move is coded as NULL, then the focus must be coded NULL as well.

Procedures for Real-Time Coding in Math/Reading

When an activity ACTUALLY begins you record the time started on the Educational Activity Sheet. At this time, you may not know if the activity will involve any TS math or reading related tasks. To be safe, you should begin coding on the Real Time Coding Sheet, until it is clear if a math/reading task is involved. If not, then cross out the real-time codes you have made thus far and discontinue real-time coding. Otherwise, continue real-time coding until the math/reading activity ACTUALLY ends for TS.

The procedure we will use for real-time coding is called "point-time sampling". We will not code every TS move, instructor move and focus, but only code what is occurring at one-minute intervals. Since we only sample every minute, we will lose some information about TS and instructor behavior, but this is offset by the many days of observation for a given TS. More importantly, it makes your job as a coder much easier than if you were required to code continuously in real-time throughout math/reading activities.
At each sampling point, you take a "mental snapshot" of what is occurring during the next five seconds (approximately). Then you record four things: 1) the time at the sampling point; 2) the TS move; 3) the instructor move; and 4) the instructor focus. Then you wait until the next sampling point and record again, etc., until the end of the activity. While you are waiting between sampling points, you won't be coding but you will be observing the TS and instructor so that you will know the context for the next sampling point.

When you code, this "mental snapshot" should reflect the relationship that exists between the TS move and instructor move and focus that best "captures the moment". For example, at the sampling point (11:08 a.m.) suppose T is demonstrating to the class long division problems at the board and TS is watching. This would be coded:

ALTOS
REAL-TIME CODING SHEET

<table>
<thead>
<tr>
<th>TIME</th>
<th>1. LEARNER MOVES</th>
<th>INSTRUCTOR MOVES 2.</th>
<th>3. FOCUS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:08</td>
<td>EC</td>
<td>XP</td>
<td>GR</td>
<td>Long division demo</td>
</tr>
</tbody>
</table>

At 11:09, during the demonstration, TS is whispering to a peer. This would be coded:

<table>
<thead>
<tr>
<th>TIME</th>
<th>1. LEARNER MOVES</th>
<th>INSTRUCTOR MOVES 2.</th>
<th>3. FOCUS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:09</td>
<td>NO</td>
<td>XP</td>
<td>GR</td>
<td>Long division demo</td>
</tr>
</tbody>
</table>

At 11:10, the teacher specifically reprimands TS, who listens to T:

<table>
<thead>
<tr>
<th>TIME</th>
<th>1. LEARNER MOVES</th>
<th>INSTRUCTOR MOVES 2.</th>
<th>3. FOCUS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:10</td>
<td>NO</td>
<td>TF</td>
<td>TS</td>
<td>&quot;Pay attention&quot;</td>
</tr>
</tbody>
</table>

Note here, that when T gives the reprimand (TF), TS is paying attention to the reprimand at the sampling moment, but the T behavior is related to TS's previous off-task behavior. Thus, we capture the sequential relationship between the teacher and learner behaviors, by coding the NO to which the TF refers.

At 11:11, the teacher answers TS's question about the directions for the math assignment:

<table>
<thead>
<tr>
<th>TIME</th>
<th>1. LEARNER MOVES</th>
<th>INSTRUCTOR MOVES 2.</th>
<th>3. FOCUS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:11</td>
<td>ED</td>
<td>SD</td>
<td>TS</td>
<td>TS confused about assignment</td>
</tr>
</tbody>
</table>

Again, the SD refers to TS's prior question (ED) about what to do on the assignment.
Later in the lesson, TS asks a question about a problem he is having difficulty with and T proceeds to help him:

| 1 1:2 9 | EO | XN | TS | TS stuck on problem |

Here, the XN refers to the question (EO) asked by the TS:

The sequence could also be from T to TS, as T asks a question in reading at the sampling moment, and TS then answers orally:

| 0 9:3 2 | EO | AQ | TS |

Here, the EO follows the AQ, and is coded because it is part of the sequence of events at the sampling point.

These prior/posterior sampling codes only pertain to when there is a direct interaction between the instructor and TS. In these situations we want to best capture their interaction. In other situations, the sampling point will consist of simultaneous codes for the ongoing event. For example, another student is reading orally, TS is following along, reading silently, and T is acknowledging the correct reading of the other student by allowing him to continue:

| 0 9:1 5 | EC | AF | GR | Oral reading |

At the sampling moment, TS is EC and AF is to the reading group (the other student), and thus, the AF is relevant to TS's silent reading.

**What to Do When Multiple Events Occur at the Sampling Point**

Sometimes the interaction will be so fast that several learner moves or instructor moves occurred during the five-second interval in which you took a "mental snapshot" at the one-minute sampling point. For example, TS may ask a substantive question (EO) to which T listens (AM) and then T answers TS's question (XN) while TS listens to the explanation (EC). All of this occurs right at the sampling point. Which codes should you record? To help you make this decision, priority heirarchies are given for TS and instructor moves:

**Priority Hierarchy for TS Moves:**

1. EW and EO
   - Engagement always takes precedence over non-engagement, if both occur together.
2. EC
3. ED
4. NI, NW, NO
Priority Hierarchy for Instructor Moves:

1. XN
2. XP
3. AF and AQ
4. AM
5. SD
6. TF
7. NU

In the above example, you should have coded, according to the hierarchies:

<table>
<thead>
<tr>
<th>EO</th>
<th>XN</th>
<th>TS</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Since EO takes precedence over EC, you should code EO, and since XN takes precedence over AM, you should code XN.

As another example, if T is listening to TS read orally (AM) but also implies that TS is reading correctly by not interrupting (AF), then you would code AF for the instructor move, since AF takes precedence over AM. Or, if T gives feedback (AF) and also an explanation as to why TS's response was incorrect (e.g., "No, receive is spelled R-E-C-E-I-V-E. Remember the rule: i before e except after c"), you would code XN, because XN takes priority over AF. Or, if TS is listening to T directions (ED) while also getting materials for the task (NI), you would code ED, since ED takes priority over NI.

Remember, however, that these priority rules apply only when multiple TS or instructor moves occur right at the sampling point. Otherwise, if there is only a single TS and instructor behavior each occurring at the sampling point, then you simply code them. For example, it may have been the case that 30 seconds prior to the sampling point TS asked a question which T answered, but later at the sampling point T has continued the lecture and TS is listening. Here you would code EC and XP, since the earlier EO and XN did not occur during the sampling point.

Ground Rule for Real-Time Coding of Reading/Math in Other Content Areas

Sometimes reading or math tasks will occur within another content area (e.g., in science, social studies, music), but the reading/math tasks occupy only a small portion of the overall activity in the other content area. That is, the reading/math tasks are not the principal part of the activity. For example, in a half-hour music lesson, only 10 minutes may be devoted to reading the lyrics during choral singing and the remaining 20 minutes are spent practicing on musical instruments. Should you code in real-time for the entire half hour? No.
Ground Rule: You only need to real-time code during the part of the "other" content area in which reading/math tasks are required.

Thus, in the above music lesson you would only code in real-time during the lyrics reading and choral singing, since that is the only part of the activity which required reading.

However, remember that this ground rule applies only when math/reading is coded as the SECONDARY content area on the educational activity sheet. Whenever math or reading is the PRIMARY content area, then you must real-time code for the entire duration of the activity.