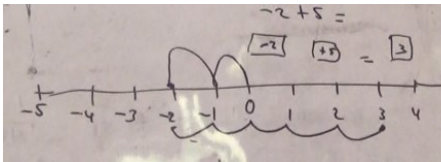
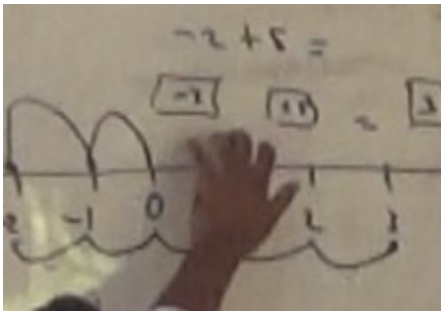
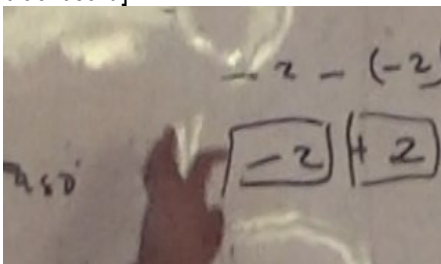


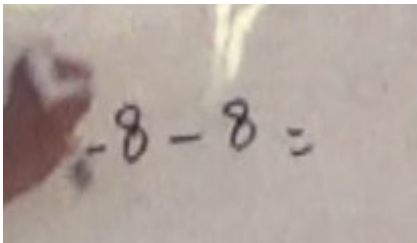
APPENDIX

Transcript 1

No.	Name	Text	Code	New Description
1	L.	Is there any other way? (5 sec). Another way (5 sec). Min two plus five. Is there any other way, besides using the number line? (9 sec). Is there any other way? (6 sec). Min two plus five (5 sec). Which is faster, for example [<i>Pointing to the previous solution using the number line on the blackboard</i>].  How about using the largest number? The numbers we use are bigger, whereas on the number line, we just use smaller numbers. What if we are asked to calculate min 100 plus 90 or min 100 plus nine five? If we make a number line like this [<i>Pointing at the blackboard</i>], then the <i>board</i> will not be enough or it could be enough if we make it in such a way. But now the question is, is there any other way besides using a number line? The way you learned in elementary school. Is there any other way, besides using a number line? (10 sec) How? (3 sec). S1 [<i>T asked S1</i>]. Besides using the number line. Min two plus five. Besides using a number line, is there any other way? (9 sec). S2 [<i>T asked S2</i>]. Besides using a number line, is there any other way? (5 sec). Okay. We'll try together the way I've learned. Here	dR4 D1d ND3b R2a	T asks the pupils to find an alternative solution strategy other than the number line through a series of explicit questions (dR4). Since no response is received after several pauses, T maintains focus on the question by referring to the previous example and providing further explanation through examples involving larger numbers (D1d). Although T's aim of encouraging pupils to think about another method is fairly clear, the explanation is delivered with a syntactically disorganized sentence structure, marked by repetition, fragmented sentences, and the use of ambiguous phrases such as "like this... like that... could also be enough...", which hinders pupils' understanding (ND3b).

		[Pointing to the blackboard] is min two plus five. Here we can conclude minus two. Talking about negative, then we talk about debt and when we talk about positive, then we talk about money. [Some pupils: Yes.] Then we compare money and debt here [Pointing to the blackboard]. We can conclude that when we talk about debt eh negative there is debt and talking about positive, there is money. We just have to compare or fill in the box like this [Pointing at the blackboard]. 	ND3d ND1a	After the pupils are asked several times with certain pauses and still give no response, T then introduces an alternative representation through a contextual analogy of debt and money (R2a). However, T interprets -2 as debt and +5 as money without taking into account the structure of the operation under discussion (ND3d). T's final question is purely suggestive, as it directs pupils toward a specific answer already implied in the question (ND1a).
2	Pupils	The first box is debt, the second box is money. All we have to do is compare. My debt is two and I have five. I pay my debts, two. Do I still have debt or do I still have money? Still have money	ND3g	Pupils answer in chorus (ND3g). The pupils' answer follows T's argument given before.
3	L.	Still have money. [Some pupils: Yes.] Yes, how much money do we have left?	ND4 ND1b ND1a	T does not intervene against answering in chorus (ND4). T repeats a previous statement without providing a new argument (ND1b) and poses a suggestive question by asking pupils to state the remaining amount of money based on the answer already written on the board (ND1a).
4	Pupils	Three	ND3g	Pupils answer in chorus (ND3g). Pupils determine the remaining money they have. They can do it by reading the answer from the board. So, it is not classified
5	L.	Three. So, it's simpler. [Some pupils: Yes.] So, if we think other than using a number line, we can also think simply like this. So, if we use a number line, we can use big numbers, but we need enough space on the board. We also need too	ND4 R4	T does not intervene against answering in chorus (ND4). T repeats a previous idea and assesses the limitations of visual representation, such as constraints of time and space when using "large" numbers (R4). T also poses explicit

		much time. We would make a number line like the example I mentioned earlier. If the number is 95 or the number is in the forties or fifties, we need to make a long number line. So, if we're just comparing between debt and money and a number line, which one do you think is better? Which one is eh using those two methods, between the method of eh using eh comparing with money with debt with a number line, which one is more... do you think is easier? Or which one do you like better?	dR4	questions that guide pupils to evaluate two types of representations (dR4).
6	Some pupils L.	Debt.	R4 ND3g	Pupils choose one of the preferred methods (R4). Pupils answer in chorus (ND3g).
7	L.	Oh, using debt and money.	M2	T checks the choice of words used by the pupil (M2).
8	Some pupils L.	Yes	ND3g	Pupils answer in chorus (ND3g).
9	L.	Oh, using debt with money. But, if we use that method, we have to really analyze the problem. Like that problem earlier, this [Pointing to the blackboard]. So, analyze it like from here [Pointing to the previous problem on the blackboard].	ND4 R1a	T does not intervene against answering in chorus (ND4). T emphasizes the importance of analyzing a problem's structure before deciding on a method of solution. T guides pupils to see that an expression like $-2 - (-2)$ should first be examined and rewritten before solving it (R1a). T then connects the operation sign to its conceptual meaning using the analogy of debt and money (R2a). As T points to the related positions on the board, additionally D1a is classified.
			R2a D1a dR1a	The T's final remark, "Minus eight minus eight. Think in the way we just did," serves as a prompt for pupils to apply the understanding that has just been explained (dR1a).
		[Meaning: $-2 - (-2)$ to $-2 + 2$] From here [Pointing to the problem again]. So, we have to think in such a way that the sign of the operation is only negative or debt or positive negative. If this is [Pointing to the problem again], then we change it too, we change this [Pointing to the blackboard]. So, we have to be able to read the problem. After reading the problem, we analyze it using that method. For example, min eight plus min eight minus eight. Min eight minus eight. Think in that way. Min eight minus eight. Zero [Two other pupils: Zero]	ND3a	This contribution is not classified as a reflective activity (R1a) because it only states the final calculation result without providing the explanation requested by T (ND3a)
10	S1			

11	L.	Min eight minus eight. You've already chosen which is easier, using a number line or using comparison. Now, if we use comparison, we just think about the problem min eight minus eight now. We can do it without crossing it out or we can cross it out. Now, there's min eight minus eight. If you use the number line or use the comparison, then what result do we get? <i>[Pointing again to the problem on the board]</i> How much? (3 sec) How much? (3 sec) How do I translate this?	ND3b dR4 D1a	T refers back to the two representations previously mentioned, yet does not provide explicit guidance on selecting or using one of them (ND3b). Subsequently, T asks the pupils to present and explain their calculations as an attempt to connect their answers with the representations previously introduced (dR4). As T points to the related positions on the board, additionally D1a is classified.
				
12	S2	Zero	ND3a	S2 presents the calculation result. Although T's request is classified as dR4, this pupil's contribution cannot be classified as a reflective activity (R4) because the statement merely provides the final answer without the explanation requested by T (ND3a).
13	S3	Eight	ND3a	S3 presents the calculation result. Although T's request is classified as rR4, this pupil's contribution cannot be classified as a reflective activity (R4) because the statement merely provides the final answer without the explanation requested by T (ND3a).
14	Some pupils	Zero	ND3g ND3a	Pupils answer in chorus (ND3g). Some pupils present the calculation result. Although T's request is classified as rR4, this pupil's contribution cannot be classified as a reflective activity (R4) because the statement merely provides the final answer without the explanation requested by T (ND3a).
15	S3	Eight	ND1a	S3 repeats the same answer, without adding new perspective (ND1a)
16	L.	Where is zero from? Please explain. When asked how, you have to use ah with... as we have just proven using the number line. If you prove where to get zero from, where to get three from, where to get five from. Now, when you	ND4 dR4	T does not intervene against answering in chorus (ND4). T asks the pupils to reflect on how to get the result (dR4).

17	S4	choose to use that way, how to... do you explain it? The problem is min eight minus eight. He said eight	ND3a	This response occurs because the pupil repeats a classmate's utterance that is spoken very softly. However, the pupil does not actually answer the teacher's question (ND3a).
18	L.	Yes, eight. How do you explain it to get the result of eight?	dR4	T asks the pupils to reflect on how to get the result (dR4)
19	S5	Zero	ND3a	S5 doesn't answer the question from T, but S5 repeats what the other pupil said (ND3a).

Transcript 2

Name	Utterance	Code	Justification of the classification
T	Who wants to explain? [S1 raises her hand] S1.	P	Since the teacher does not specify which metacognitive activities (from the areas of monitoring and reflection) she expects from the pupils, this is classified as an open stimulus (P).
S1	Third line?	R1a dM1 D1d	The pupil interprets the structure of the table in the way that the row labeled by the number 3 is the first row, which she has to comment (R1a). She asks, whether her interpretation is correct (dM1). S1 wants to improve the discourse by reassuring herself that she is talking about the right place. Therefore, it is additionally classified as D1d.
T	The first line.	M2 ND3a	T selects the word based on the visible position of "first row" (M2), but it is not the first row in the table. This could create a misunderstanding; therefore, additionally classified as ND3a.
S1	On the twelfth day of the tenth month of 2009, the initial balance was 250.000. In the bookkeeping, he deposited 25.000. I calculated the 275.000 from 250.000 plus 25.000.	rR1a	S1 interprets the structure of transactions in bookkeeping in an elaborated way (rR1a).
T	S4 (Teacher reprimands pupils who do not listen to their classmate's explanations)	D2	T indicates by calling his name that the pupils' behavior is not accepted by her (D2).
S1	What do you mean? Is my answer right or wrong? S2.	dM5	After that, S1 asks her classmates to check her answer (dM5)
S2	That's right	M5	S2 checks S1's argument (M5).
S1	Does anyone have any comments? Does anyone have any questions?	dR1a	S1 invites to reflect on her interpretation of the structure of transactions in bookkeeping by asking for feedback or questions (dR1a)

T	Please ask questions! This is the first one		T provides opportunities for pupils to ask questions. Therefore, this is not classified. T indicates that there is a first pupil to comment.
S1	S3.		S1 calls S3, so it is not classified.
S3	Why did you write 250.000 in the opening balance? Why?	drR1a ND3b	S3 asks for reasons for the information in the bookkeeping (drR1a). However, it is not true, that S1 has written 250.000 in the starting balance. This is written already in the text of the task. This incorrect choice of words could additionally be classified as ND2; however, as this makes it unclear what S3 means, it is additionally classified as ND3b.
S1	What?		Because S1 only says that she did not understand S3, this statement is not classified.
S3	Why is opening balance 250.000? (Can't be heard clearly)	drR1a	S3 asks for reasons for the information in the bookkeeping (drR1a). She has now corrected the wording of her question.
T	What?		Because S3 still is not understandable, the teacher says that she has not understood S3. This statement is not classified.
S3	Why is the starting balance 250.000?		As S3 only repeats her question, this is not classified.
S1	Because he has done this, these are two times, these are two transactions. He has done this three times, this what, there has been three transactions in his bookkeeping.	rR1a ND3b	S1 tries to explain that the opening balance is linked to the circumstances of a previous transaction that is not visible in the exercise (rR1a). However, because she is speaking from her seat and cannot point to the relevant information, her explanation cannot be understood, therefore additionally is classified ND3b.
T	Where did you know that?	drR1a	T asks the pupil to explain in detail, where the information is available (drR1a).
S1	I knew it from number three. But there are numbers one and two.	rR1a ND3a	S1 gives a reason (rR1a); but her explanation is not elaborated enough to be understood; Therefore, additionally classified as ND3a.
T.	Do you understand?	dM5 ND1a	T asks to check understanding of the explanation (dM5). Because this is not a real question, but a suggestive question, ND1a is additionally classified.
Some pupils	Yes.	M5 ND3g	Pupils check the statement from T (M5). By formal reasons this answer is classified. Since some pupils answer the suggestive question in chorus, ND3g is additionally classified.

T	There must be some who were confused earlier why the opening balance is not zero. <i>[T reprimands pupils who are not listening to T's explanation (29 sec)].</i> Is it clear? Look at the number, which is number three. That's exactly what S1 explained. So, the reason why the initial balance is not zero is because there have been previous transactions. There are two transactions that are not written here, in particular, the first and second transactions. Directly taken from three to seven. Which means the opening balance is taken from where, S1?	ND4 R6a D2 rR1a D1a dR1a	Because the teacher does not react to the answering in chorus, it is classified as ND4. T notes as an interim result that some pupils had difficulties in understanding (R6a). T asks the pupils to pay attention to T's explanation (D2). Because this is probably just a phrase to lead into the planned explanation by the teacher, it is not classified as ND1b. T explains the sequence of work steps in bookkeeping, especially in relation to why the opening balance is not zero and how previous transactions affect the starting balance (rR1a). When T explained, she pointed to the appropriate section (D1a). Then T asks S1 to explain how the opening balance is obtained (dR1a).
S1	The opening balance is taken from the previous transaction.	R1a	S1 explains how the opening balance is obtained.
T	From? S5. (T reprimands the pupil who is not listening to his friend's explanation)	dR1a D2	T asks for clarification on the position of the opening balance in bookkeeping (dR1a). T asks pupils to pay attention to their classmates' explanations (D2).
S1	From the second transaction in the opening balance.	R1a	S1 answers by analyzing the structure of the bookkeeping (R1a).