

## School A

### Transcription between teacher and learners:

#### Incident 1:

TA1 then asked the learners what the next step was from  $5 = 3 + c$ . The following dialogue ensued.

*LA3: 5 + 3*

*TA1: Plus?*

*LA3: Minus*

*TA1: Why are you saying minus? (Learners just mumbled).*

*TA1: Why are you saying minus? (Repeated TA1)*

*LA4: Because the 5 is big and the 3 is small.*

*TA1: LA4 is saying because the 5 is big and the 3 is small, is correct? (sic).*

*Learners (collectively): No!*

*TA1: okay, why?*

*LA1: We are saying negative because 5 is on the negative side.*

*TA1: She's, correct?*

*LA2: She's almost there.*

*TA1: Oh, you have the answer; okay, tell us.*

*LA2: 3 was on the positive side, 5 was on the negative side, so we can't add the numbers where the symbols are not the same, we have to multiply the negative plus ... negative multiplied by positive equals to negative, so that is why we said 5 minus 3.*

TA1: *No! Guys, when a number is on this side of an equal sign (indicating the right side of the equation on the board:  $5 = 3 + c$ ), you want to take it this side (indicating the left), it's going to change sign (sic). That's why it's no longer a positive 3 it's a negative 3 because it was at that side now it is ...* (using hands to indicate the movement).

#### **Incident 2:**

TA1: *"Thank you LA6, I think LA6 he have (sic) completed our activity 1 for us, and then he got everything right. I don't know what groups they got (sic). Go nale group e e leng gore [Is there a group that has] they have different answers there? Okay, let's go to activity 2."*

#### **Incident 3:**

TA1: *so, 1 is equal to c, is the answer? Guys, I said to you when you apply this formula ( $T_n = dn + c$ ), you are going to generate the general rule, akere? [right?].* (Learners collectively said "yes"). *You find the constant, after finding the constant, it's where you have to write your general rule. This one is not a rule (pointing at  $T_n = dn + c$ ), it's a formula to generate your rule. You didn't find the rule now, you find (sic) only the constant, please after finding the constant...* (teacher points at where she was saying learners must find the rule).

#### **School B:**

##### **Incident 1:**

TB1: *Okay, do you still remember what I said when we are taking about the common factor?*

Learners: *Yes.*

TB1: *If we say something is common, it means it must be available on term one (pointing at  $x^2$ ), term two (pointing at  $x$ ) and term three (pointing at 10). Now, if you look at  $x^2$  ... on these two ( $x^2 + 7x$ ) we can say we have a common factor of  $x$ , but remember, when we take out a common*

*factor, we must make sure that whatever we say is common must be available in all these three terms (sic). Now, do you see something  $x$  here (pointing at 10) or do you see just a number?*

*Learners: Just a number.*

*TB1: Now can we say  $x$  is a common factor?*

*Learners: No.*

#### **Incident 2:**

TB1 then asked the learners what is  $-2 + (-5)$  and the following conversation took place.

*LB3: 7.*

*TB1: is the 7 positive or negative?*

*LB3: (Unsure) Negative.*

*TB1: It seems as if you are not sure. Why do you say is (sic) negative?*

*LB3: (Mumbles).*

*TB1: Okay, can you come in and assist? Yes? (Pointing at LB4).*

*LB4: If the signs are the same, you take the sign of both (sic) and add the numbers.*

#### **Incident 3:**

*TB1: That is what you did in Term 1. If you have two integers with the same signs, when we add them, if the signs are the same remember we do what? We add and the answer will take the sign of both (sic).*

#### **Incident 4:**

*LB5: Sir, so when it is  $x^3$  am I going to open three brackets?*

*TB1: At your level, they cannot give you an expression with the power of  $x^3$  whereby you're requested to open three sets of brackets. So, if they*

*give you such a trinomial, it means somewhere, somehow, you have to factorise it first by taking out a common factor. What made you to ask this question maybe? Because here I have opened two sets of brackets, what informs you to say I'll have three sets of brackets?*

*LB5: Akere [right], Sir, when it is  $x^2$ , I can see you opened two sets of brackets, yes, sir.*

*TB1: Perfect! Le a mo kwa gore o reng? [Can you hear what he is saying?]. O re [he says] because the highest exponent of this trinomial it is (sic) two; hence, that's why we are opening two sets of brackets and you're correct.*

#### **Incident 5:**

LB6 raised his hand and said: But meneer [sir], in the textbook they say factorise  $a^4 - b^4$ .

*TB1: Okay perfect, it means now I'm going back. Remember now we are factorising a trinomial.  $a^4$  has a square root. What is the square root of  $a^4$ ? (Learners collectively said  $a^2$ ). What is the square root of  $b^4$ ? (Learners collectively said  $b^2$ ). Now, this one is a square (pointing at  $a^4$ ), this one is a square (pointing at  $b^4$ ), in between there is a negative sign, remember I said the difference simply means between the two squares there must be a negative sign.*

#### **Incident 6:**

*LB6: When we add the 4's ... when we add negative 4. plus 4 it will give us negative zero ... it will give us zero, then when we multiply them they will give us negative 8. [Communication process of mathematical thinking].*

*TB1: Negative...?*

*LB6: Oh, negative 16.*

*TB1: Now this one (LB12's solution) is it correct or wrong?*

*LB7: When we add 4 plus 4 is equal (sic) to 8 and when we times it is equal to 16 (sic). [Communication process of mathematical thinking].*

*TB1: But I don't see 4 plus 4, nna [I] I see minus 4, minus 4.*

*LB9: Which is negative 8.*

*TB1: Is it the same as the middle term? (Learners: Yes). And then when we multiply minus 4 times minus 4 what is the answer?*

*LB9: Positive 16.*

*TB1: Is it the constant?*

*Learners: Yes.*

#### **School A: Post Lesson reflection:**

TA8 indicated to the LS team that “there was a learner who gave an answer (regarding identifying a pattern in the classroom) that was similar to another learners’ answer and was ignored as TA1 decided to proceed with the lesson”.

*“I think she raised her hand and then realised gore [that] when they are saying tables, then they realised after gore [that] ohh mang mang o boletse ka the tables [so and so spoke about tables], so that's why she didn't go further explaining the way they are arranged.”*

TA1 said:

*“When we are talking about a negative number and a positive number, remember it's where the integers comes (sic) in. Akere [right] remember the integers is also a new topic (sic) to them in Grade 7. These learners neh [right] mo ba hlagang ko teng [where they are coming from – meaning lower grades], if you subtracting a big number to a small number, is possible (sic). But if you're subtracting a small number to a big number is not possible (sic), for them! But after doing the integers it's where they can say 'no Ma'am it's possible now because the answer can be in a negative number.’”*

*TA1: Okay, the rule says we are doing... ba re ke eng? [what is it again?] Inverse?*

*Interviewer: Additive inverse?*

*TA1: Additive inverse, whatever that you are doing on the left-hand side you must also do on the right-hand side. That one was a general rule in Grade 7 because when they say you take this number, you take it that side, it's where they get confused."*

TA1 replied by saying:

*"You know what, in Grade 7, neh? [right?]. We are not allowed to use more than the  $n^{th}$ , if you are saying  $n$ , you must have one  $n$  on that one, you cannot have two  $n$ 's (sic).  $n^2 - n...$  in Grade 7, you cannot have double  $n$ . I can see gore [that] that one is  $n^2$  but you cannot have  $n^2 - n + 1$  in Grade 7."*