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From textual problems to mathematical relationships: case studies of secondary school students and the discourses at play in interpreting word problems

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Corona – Peer group discussion

Stanza 1

1. Roenel — I'm struggling with word problems…

2. Lerato — I think they're quite nice…

3. Roenel — I must say I really am struggling... because Mr. Watson always told us that the easier way to solve problems, you know it's much quicker, I must say to work it out and all that...

Stanza 2

4. Ayanda — I prefer equations than word problems. It's much quicker to use an equation to solve a word problem.

5. Roenel — You need an equation to solve a word problems, it's just one and the same thing.

6. Ayanda — But, I can't get the equation coz it's too complicated for words. You know some things like...

Stanza 3

7. Roenel — I really don't like the ones with the rectangles and the...

8. Ayanda — I liked the last one...

9. Roenel — The last one I think he was just checking to see if you know, if you can use equations and all that, so that if you can [all talking together]...

10. Roxanne — The first one, the problem was it didn't give you the actual like... the actual like measurement. They just told you like the length is like two metres more than the breadth. So you just had to use *x* [all talking together]...

Stanza 4

11. Roxanne — ... What, what's the answer?

12. Roenel — I don't know, for the first one I got five. The second one I was gonna go with a third, and two and a third...

13. Lerato — I got four and three.

14. Roenel — ... and one...

15. Ayanda — I had no idea...

16. Roxanne — I got two and four.

17. Roenel — I got none of them

[all talking about the problem]

Stanza 5

18. Roxanne — We don't do word problems. This term we didn't do them... We only did…

19. Lerato — This term we didn't do it.

20. Roxanne Mr Babbage didn't do it, not even one word problem.

Stanza 6

21. Ayanda The second one guys, I was lost here.

22. Roenel I was also lost. I just...

Stanza 7

23. Roenel I did the first one, you know and then I got 125 *x* and all that... and then I did all the boring things with the calculator and all that...

24. Roxanne …one… the thing is you know, okay I got the same number, but I got different... What did you get?

Stanza 8

25. Roenel I got three.

26. Roxanne I got *x*… Okay, I said…

27. Ayanda I got four.

28. Lerato I got two.

Stanza 9

29. Roxanne But if you say three[?] days the basic fee is 150 and even the day, like the rate for the day is R15, so it's 165. Then 165 times three, I think that will give you 495. And then you say 60 rands and plus 15 rands which is 75 rands, times three, okay then I forgot, I had it somewhere, that's two... 235... which is not the same amount. The only way that I got the same amount, I said 165 times five which gave me 825. And then I said 75 times 11, which also gave me 825, but it's not the same number of days.

30. Ayanda Ja.

31. Roenel Well I said the 150 plus the 15*x* because you don't know how many days exactly

32. Lerato ... it's per day only... No…

33. Roenel ... and it is equal to 15 rand plus 60*x*, I donno the what's in 60*x*. [Some giggles] you notice the equation and...

34. Ayanda I just divided, because I was lost I just divided 150 divided by 15, it gave me 10, and then for the thing basic fees. Then for the daily rate I just did 60 divided by 15 and that I gave me four. And then I did Clear Vision Television, umm 150 divided by 15 it's the same as the basic fees, that gave me 10 again and then Best View Television, and I did six, 60 divided by 15 and it gave me four again. So it gave me the same answers.

35. Roenel Oh, ja! The same answers.

36. Roxanne Oh! Maybe you're a very [inaudible – laughing]...

Stanza 10

37. Ayanda Okay let's look at the next one... I was totally lost... [General agreement]

Stanza 11

38. Roxanne — You know what, I said that 32 kilometres per hour... minus 24...

39. Lerato — ... well I timesed it.

40. Roenel — I added them. [General chuckles]

41. Ayanda — ... I timesed by 15 minutes...

42. Roxanne — ... and then it gave me 12 and then I said this is speed divided by time... [others talking]... and then I said 12 divided by 15 give me, which gives me 0,8 kilometres, so I don't know it's the right answer...

43. Roenel — I said the 32, like the 32 kilometres per hour *x*, which is don't know exactly the distance, something 24 kilometres per hour, we don't know *x*, we don't know that, is equals to 15 minutes, just put there [inaudible]... and then I got 3,73333... [others chuckle] that's just rounded to 4.

44. Ayanda — I was totally lost. I just wrote... I just went... err, 34 kilometres per hour time is 15, that gave me 360. And therefore 260 minutes divided by 32 kilometres, that gave me 11,25 kilometres per hour.

45. Roxanne — Ha...

46. Ayanda — …and then I don't know…

47. Lerato — It was... 56 kilometres.

48. Roxanne — 56? [Said with disbelief.]

Stanza 12

49. Roenel — The last one... we all got that one… come on!

50. Ayanda — I just said 11c minus 10c...

51. Roenel — No, I did it the equation way, you know. I said the change like *x*, which is the unknown because you don't know, you know... [inaudible]...

52. Ayanda — No, check here... check this here, the bottle costs 10c...

[all saying together] more than the cork...

53. Ayanda — I didn't mind more than the cork, I just went 11c minus 10c, that gave me 1c.

54. Roxanne — No, it's different, okay. Is it like 10c more than the cork? 11... 1...

55. Ayanda — The cork will have to be one, ja… [All talking together]... I wish we always get these ones. [All talking together, shuffling paper.]

Stanza 13

56. Roenel — ... you have to work out the calculation of the rectangle, and the square...

Stanza 14

57. Ayanda — So what did you write when they ask you here... err, write a paragraph to explain how you feel about word problems in mathematics...

58. Roenel I put, "they are what help us solve problems that are in a quicker way by mathematically solving them. So instead of reading over the problem word by word, rather summarise it and solve it in a mathematical way. I must say I like them a lot and enjoy them because I really don't like reading over a lot of words. Just solve the problem by using numbers which you are given and get the unknown by using an equation.

Stanza 15

59. Roxanne Ah, when did you like straightforward things?

60. Roenel I hate reading... I must say I don't like reading...

61. Roxanne I loved reading... that's why I enjoyed geography.

62. Lerato Do you like reading?

63. Roxanne Yeah, I love reading stuff, like the reading books... I know one thing...

64. Roenel That's why I like maths when we doing algebra... you know algebra...? I love it.

Stanza 16

65. Roxanne ... Mr Babbage doesn't make it nice... if he walks to the board, he will write sum, goes to the back, by the time he comes... [all talking]... in 10 seconds, and you...

66. Lerato …and you get the calculation wrong.

67. Roenel … and you get a chocolate or something if the answer was right... we won't mention the rest of that, you know.

68. Roxanne ... and I got to drive his car, which I nearly crashed. I tried to [turn?] and I nearly crashed.... And I got to go to McDonald's. I only got the burger and they all got that milkshake and [a classmate] had to choose something from the tuck shop... I love those things, he makes maths so much fun...

69. Roenel ... because if the teacher's not fun then... you get all bored and so on...

Stanza 17

70. Roenel But what I hate is geometry, I hate geometry [putting head in hands on the desk].

[All talking together]

71. Roenel Do they ever give you geometry and you have to solve it in like this way, like a rectangle, and then in words?

72. Roenel ... [inaudible]... geometry like, and you have to solve it like in this way, something like that. Like, you know those, the rectangle and then, then a few words and then you must solve it. You know like... [inaudible]...

73. Ayanda I think geometry is more the same as word problems, you need a lot of thinking.

74. Roenel You need a lot of thinking.

75. Roxanne It's just that geometry has a lot of rules. There's congruency... you know... you know [all talking together].

76. Roenel What are the rules with word problems…? What are they? Always use an equation, use *x*.

Stanza 18

77. Ayanda I wrote here that word problems are... it's sort of like they give you an equation, but they give it to you in words, in writing. And then... err, what I feel about them... err, I really don't understand them, but I really try to understand and keep on learning how to solve the problems.

78. Roxanne I said word problems are sums given in mathematics by putting it in a story form and having to solve the problems and answer the required questions. Word problems can be easy if you understand them and a bit difficult if you misread the question or don't understand...

79. Ayanda Ja, ja... a bit complicated.

80. Roxanne For me personally I would say it depends on it's level of difficulty. I like ones that were easy and straightforward and also the difficult ones... [some background comments, inaudible]... is that challenge my level of thinking.

Stanza 19

81. Lerato The fourth one was easy, the other ones was challenging.

82. Roenel Ja, they are, and you know sometimes you must read over a question a lot of times... but just misread one word, it just wipes you out.

83. Roxanne ... [in Afrikaans and stuff?]... you just [don't] understand one word in the sentence and it makes sense... make sure, make sure... sometimes it's confusing me...

Stanza 20

84. Roxanne You know maths it depends on what kind of a teacher you're having

85. All Ja.

86. Roxanne If you, your teacher does, you know like for biology, which is my subject, she uses, she has great like puzzles and stuff so you can remember it okay, you talking about this thing then you can like, you can relate it to real life. Maths it's just talking tower, height... [inaudible]... but, you know when you get like [inaudible] you say okay, you did this, and you get this and you can say okay, a, a playground it's, the length probably is the size, the length can be this way if you don't know where length is and breadth, so maths... eisch, maths, maths, maths...

Stanza 21

87. Roenel Without maths, I don't see you going any further… I seriously don't.

88. Roxanne …because maths and science and the question you know most things, I mean you know. But one thing they can really help with is logical thinking.

89. Roenel Ja.

Stanza 22

90. Roxanne Coz they give you a problem to do and you know when to solve it you know, you, even if you don't know how to solve it but you can just find clues and one of the, what the chances are the first step which I don't think is right is probably the correct one [laughs].

91. Ayanda Mmmm. Ja, I know the feeling, never complicate things, write what you think.

Stanza 23

92. Roenel You know, I like it with trigonometry, coz with trig you get examples, you know like maths stories and all that... Just taking stories, putting them into numbers and the calculator and all that…

93. Roxanne The trigonometry word problems are easier than the algebra ones.

94. Roenel They are much easier.

Stanza 24

95. ? Think... oh, word problems... what chances you got this right?

96. Ayanda ... [inaudible]... the solution, and see if the sums right. I think I'm… I'm not sure. The first question…

[All talking together]

Stanza 25

97. Roxanne I don't understand the first one at all… I…

98. Ayanda I got length times breadth.

99. Roxanne I know the area is length times breadth, but then the, the length is *x* plus two, right, and then it is *x* plus two and then they increase it by two and it's, it's *x* plus four. And then the other one it was *x* alone and then they decreased by one metre, so it's *x* minus one. And then if you put that in an equation its $x^2 + 3x - 4$, if I'm not mistaken. Ja, and then this answer is just wrong... you don't get such answers in maths [chuckling]. But I just love the answers for... factorisations...

[All talking together]

Stanza 26

100. Lerato Maths is fun

101. Ayanda Okay…? [chuckles].

102. Lerato Maths is fun...

103. Ayanda ... and very complicated...

104. Roenel ... and some are complicated, and some [inaudible]... a lot of practise and testing you know your ability of thinking and understanding... [inaudible]...

Stanza 27

105. Roxanne It is, ja. Because sometimes you get the equation right but you just write the wrong numbers but you still get the one or two marks...

106. Roenel And it's like you can see where you went wrong... Just don't give up because once you give up you [inaudible]...

Stanza 28

107. Roenel Coz I think, I think these ones are like easy... that is with…

108. Ayanda ... compared to the ones we get in class...

109. Roxanne The ones that we get there like how do I start, when I started...

Stanza 29

110. Ayanda Okay guys, I, I, I must say... it was fun. The…

111. Roxanne Ja.

112. Roenel It was a lovely experience... Okay, I'll be doing some more work...

113. All Oh really? [Chuckles].

114. Ayanda So the next time we see such a problem...

115. Roenel ... we might know how to do it. Or we could just ask our teacher.