**Rosendale Year 5 Lesson Study: Research Lesson Planning**

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| Date: | 28.01.15 | Year group: | 5 |
| School: | Rosendale Primary School | | |
| People present: | Eileen Coan, Hannah Owen, Alex Hayward, Matthew Criddle | | |

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| Date of research lesson: | 28.01.15 | Permission to video lesson: | Yes: | No:  × |
| Research lesson title: | Exploring Singapore Bar | Place of lesson in the sequence: | First Lesson | |
| Year and ability group | Year 5 mixed | Number of children | 30 | |

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| Impact focus (from Impact Framework): | To improve the low ability group’s capacity to solve multistep word problems. | Initials of focus children (from Impact Framework): | M.B.  E.B.  A.T.  T.N. |

Lesson description:

In this lesson children are introduced to the ‘singapore bar’ as a method for translating a word problem into a pictorial representation.  The calculations are set at an easy level so the focus is on drawing a bar to represent the information given and the quantity to be calculated.  The lesson structure requires pupils to work collaboratively and to discuss approaches so that their language helps to develop their thinking.

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| Phases within the lesson, purpose, and neriage: | **Research Questions:**  How effective is a visual method in helping children translate word problems into a number sentence?  **Lesson objectives**  I am learning to use the Singapore Bar to solve word problems.  **Phase A**  Warm-up (Quiz Quiz Trade 9 x table)  Share a fairly challenging word problem. Show a map of Singapore and explain that I’m going to show them a method that is used in Singapore to help children solve word problems.  **Timing: 5 minutes**  **Phase B**  Show a very simple word problem. Sam has 13 marbles. Mya has 12 marbles. How many marbles do they have altogether? What’s the key information? Explain that this information is going to be represented using bars (rectangles) and question marks.  Model drawing a bar and write the number sentence associated with it.  Model a couple more.  Give the children another story – they draw the bar. Solo. Then take turns to explain their reasoning to their partner.  **Timing: 10 minutes**  **Phase C**  Children given worksheet with 10 mixed problems.  Rally Coach – differentiated word problems (some children will have word problems where there are more elements to the bar). Focus children will be given a blank bar for the first questions, and they calculate which numbers to put in.  **Timing: 15 minutes**  **Phase D**  Mini-plenary  Choose a couple of children to share their bars with the class.  **Timing: 5 minutes** |
|  | **Phase E** Creating our own stories.  Model writing my own story for some given information  Question, bar, number sentence, calculation.  Children write 3 of their own stories and draw the bars to represent them.  And the number sentences. Then use calculators to work out the answers.  Mini Plenary  Children share a story, number sentence and bar.  Timing: 15 mins  Final plenary. Do you |
|  | **Phase F**: Go back to original question. How can you use the bar to represent this question?  Timing: 5 mins. |
| Materials: | **Phase C** - Resource sheet 1: 5 simple addition and subtraction questions. The first couple have bars already done for them.  **Phase E** – Resource sheet with shoe shop info and picture.  Question……  Bar…….  Number sentence…….  Calculators and miniwhiteboards. |

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| **Planned teacher – student interaction** | | |
| Key questions that the teacher will pose | Anticipated student responses | Teacher responses to student responses |
| **Phase A** |  |  |
| **Phase B**  **What is the key information in this question?** | **It’s about boys and girls** | **To answer this question what are the important numbers?** |
| **Phase C**  **Tell me about your bar?**  **What does this part of your bar tell us?** | **Children don’t know what numbers to write where.** | **This bar represents…** |
| **Phase D**  **Tell be about your bar?**  **Has anybody drawn a different bar?**  **Do both of these bars represent the same problem?** |  |  |
| **Phase E** |  |  |

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| **Key discussion points (question stems for guidance only)** | **Decisions made / how points were resolved** |
| How do we motivate children to use ‘the bar’ to represent a problem? | Start the lesson with a tricky question (possibly from previous test which the children are familiar with) and explain reasoning – used in Singapore – high maths levels etc – come back to this question during the plenary at end of lesson |
| How do we ensure the lesson is focussed on use of ‘the bar’ rather than calculation strategies? | Calculations to mostly be kept simple. Harder calculations – use of calculators. Clear focus on the method and coming up with the number sentence as the main part of the lesson rather than getting to the answer. |
| How will we scaffold children’s understanding of ‘the bar’ so that they begin to create bars from word problems / stories more independently? | Use of ‘bar’ frames for children to add in numbers. |
| How will we ensure that children see the link between number sentences and the use of this new model of ‘the bar’? | Clear modelling of simple word problems -> bar -> number sentence with use of mini whiteboards as AFL |
| How will we ensure all children are sufficiently challenged? | Blank bars as support for those struggling.  Opportunity for children to extend and deepen understanding by creating their own stories with bars to match (Phase E) Use of Rally Coaches. |

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| **Focus for observers (should relate closely to Research Question)** |
| Are the children able to create an appropriate bar to represent word questions?  How do they explain their reasoning? |