

WORKING ALONGSIDE TEACHERS IN THEIR CLASSROOMS

Sukhjit Dillon, Mike Ollerton and Sarah Jayne Plant use games to energise learning in Year 3 and Year 4

The following piece has been co-written by Sukhjit Dhillon, Mike Ollerton and Sarah Jayne Plant. The *italic red text* contains commentary and reflections by Sukhjit and Sarah Jane who co-taught with Mike.

What a joy it is to work alongside teachers in their classrooms. I realise my next thought is a complete and unaffordable luxury... but just suppose it were possible, fundable, for class teachers to work together, say once a week - not to combine both classes, but to jointly work with just one of their classes. The possibilities and outcomes for collaborative practice, involving joint planning, and sharing best practice would be immense. I offer this piece in the light of recent experience of working alongside teachers in classrooms. 'Working alongside' meant planning, and later co-planning, ideas for lessons, which embraced a problem solving/using and applying type methodology within the brief of supporting pupils' engagement with the concept of subtraction. Each lesson was team-taught by the class teacher, the teaching assistant and myself.

From the lessons we became aware of the opportunities class teachers and teaching assistants had taken to see and hear pupils' engagement with the tasks. This occurred perhaps because the teachers had more time to listen, intently, to conversations between pupils, and to observe mathematical behaviours of those they may not necessarily have had opportunities to observe. This may have occurred because someone else was temporarily taking the lead, or offered a slightly different way of engaging pupils with learning mathematics. Working with Y3 children and the following day with Y4s and 'playing' games with cards and dominoes, it became clear how many ways there were to;

- a use such resources, and
- b appreciate the potential impact upon pupils' social and mathematical development.

With the Y3 pupils we began by modelling, then playing the simple 'matching' game. This brought

out social issues such as taking turns and helping each other. Mathematically children were 'only' engaging with the 'content' skill of recognising numbers and the process skill of matching; as such one might question the value of such an activity taking up valuable lesson time where the intention was to develop pupil understanding of subtraction. There were, however, broader issues to consider and these were the value of teaching children how to play simple, social games, especially with dice, cards and dominoes, both in the classroom and even more importantly to encourage such game playing to happen at home. This is because as the children learn a selection of games they will inevitably develop their confidence with numbers, the application of operations and being able to practise skills of addition, subtraction, multiplication and, once they have mastered the game of 5s and 3s, division. Arising from the selection of games described below there also exists an opportunity for pupils to understand the concept of place value.

In a challenging year group of abilities and behaviours it was wonderful to see every child engaged with the activities. They particularly enjoyed the card games and as the lesson progressed some children were overheard suggesting how to make the game more challenging. Furthermore, we overheard strategic thinking: "I'm going to stick on 19 with 3 cards because W has 20 but using 4 cards so I know I win" and reasoning language such as: "I can't get more than 5 because that will take me over 21".

Unexpectedly, the lessons provided us with a much welcomed opportunity to informally assess speaking and listening as well as children's grasp of following and giving instructions thus supporting pupils' literacy learning.

The domino games we played were:

Domino Game 1

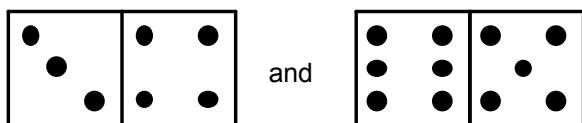
Matching then counting the number of spots anybody had left once a game had concluded.

Domino 2 Game 2

This was structured in groups of threes where

there were always two players and one recorder. The players each drew two dominoes, counted the number of spots on each, then had to subtract the smallest from the largest.

For example, if the dominoes



were drawn, the calculation would be $11 - 7 = 4$

The total of all the differences for each player were calculated and the 'winner' was the person with the largest total - though this could equally have been the smallest total. The recorder's role was to write each calculation as a number sentence, and do the totalling at the end of the game.

Domino Game 3

Again the same structure, but this time pupils had to use place value to turn the number of spots into two-digit numbers, for example, either 34 and 65, or 43 and 56. This became a more strategic game because pupils had to decide which were to be the tens, and which the units, so when they found the difference they were trying to make the largest answer - again it could have been the smallest.

Using the dominoes above this, obviously, would have been $65 - 34 = 31$.

Domino Game 4

The same structure as for game two; once the two dominoes had been drawn the task was to multiply together the number of spots on each domino, then find the difference.

Using the same example as above the calculation would be $6 \times 5 - 3 \times 4 = 18$

In the timeframe of the lessons the Y3 classes played games 1 and 2, and the Y4 classes played games 2 and 3 - although the Y4 teachers felt some children would benefit from an extension task, and consequently some children were given dominoes up to a 9-9 set.

To close each lesson pupils were asked to discuss in pairs the question:

“What was that all about?”

From each class a screen full of comments were gathered. Some pupils referred to the actual mathematics - adding, subtracting, writing number sentences, and others referred to social issues – for example, enjoyment, fun, taking turns, winning not being the most important thing

- yes, one pair of pupils did actually say this! and about helping each other. What became clear was how pupils recognised there were several 'objectives', none of which could be engaged with in isolation.

The card games we played were:

Card Game 1

Pupils were in groups of three, 2 players and one recorder. Eighteen playing cards of two suits using the numbered cards 1 to 9 were spread face down. Players took turns to choose two cards and the recorder wrote a subtraction calculation of the highest subtract the lowest, for example, $7 - 4 =$

Players had to agree upon the answer whereupon the two cards were gathered up and the other player took a turn; the process was then repeated until all the cards had been used up.

The recorder kept each player's calculations in separate columns on mini whiteboards.

Each player had five 'goes' so the recorder wrote ten number sentences, five in each column.

At the end of the game each player's sets of answers were totalled.

After three games, therefore, everybody had played two games and recorded one.

Card Game 2

Pupils played in pairs

From eighteen numbered playing cards (1 to 9) pupils turned over four cards and placed them in order from highest to lowest.

Pupils then calculated the three pairs of differences between adjacent cards.

For example: If the cards turned over are 9 6 6 2, then the differences are 3, 0 and 4

The next step is to total these differences, that is $3 + 0 + 4 = 7$

Finally pupils looked at the largest and the smallest numbers and again found the difference, that is: $9 - 2 = 7$. The fact that both answers were the same may initially surprise pupils but, of course, this would be no fluke!

Towards the end of the Y3 lessons using the playing cards we discussed whether anybody had sets of cards to play with at home and if they would be able to explain and play the games to someone at home. Because I have access to any number of packs of cards, kindly donated by local Bridge Clubs, then making these available to some children was unproblematic.



Following our whole school sessions with Mike in January at the beginning of 2011 we have used cards and dominos for some lessons. Furthermore, since this collaboration children are eager to take the apparatus out during breaks and we have been approached by several parents who have favourably commented on the children's increasing enthusiasm for card and board games at home. As class teachers we have found that the speed, and accuracy, of children's mental addition is significantly increased and subtraction is improving especially when children are playing with cards and dominos. Recently a visiting maths specialist commented on the successful collaborations between all abilities in our Y3 classes, and was unable to distinguish between children aiming for Level 4 and those aiming for Level 2.

If such game playing is encouraged and are developed throughout, then by the time children are in Y5 or Y6 they might have opportunities to become confident at playing games such as 5's and 3's, Yahtzee, Backgammon, Four in a line - where the winning line can be read off as four pairs of co-ordinates, Chess, Beetle Drive, and even Bridge. I mention Bridge because:

- a** it is a fantastic game of logic and strategy, and
- b** in some places across the UK there are volunteers who teach 'mini-bridge' in primary schools.

Playing such games in school and at home, therefore, means children can practise a wide range of mathematical skills from arithmetic to logic and strategic thinking. Children can also have opportunities to engage with other people possibly in a more social environment and perhaps in a less frenetic whizz-bang environment offered by some computer games. Of course there are also the fantastic games of Boggle and Scrabble to support children's spelling.

The lessons provided the children with many learning opportunities covering a range of maths and literacy objectives furthermore it provided a platform for learning through social interaction, taking turns and helping others learn the rules for playing. We all learnt and enjoyed ourselves - the learning continues. It was loud and fun, so much so that we wonder whether an inspector would have seen past the noise and the active excitement, which might be perceived as 'chaos' and seen the real learning going on in our classrooms?

The issue of whether we can afford to use valuable teaching time to engage learners in playing games becomes more pertinent if we ask ourselves the question:

"Can we afford not to take up valuable lesson time learning to play games to develop such skills?"



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