Playing with Cards – from active learning to classroom management.

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Picture this scene…a seven-year-old lad sitting in front of his gran's fireplace. Here, he engrosses himself with 52 little pieces of card each emblazoned with a different pattern on each. A simple game of Solitaire would keep the young lad busy for hours and sparked his enjoyment of logic puzzles but also made him a huge fan of playing cards. So, when that seven-year-old became the teacher I am today, there is no question of what would become my manipulative of choice.

A History

Playing cards are thought to have originated in China in the 9th Century. The 52-card deck was brought to Europe in the 13th Century which originally had suits of swords, polo-sticks, cups and coins with face cards of King, Deputy-King and Under-Deputy. Many different suits have been recorded including unicorns, dogs, rabbits and apes, monkeys and lions, parrots and peacocks, pinks, columbines, printers' inkpads, vases, drinking cups, books, combs, fishes, crowns, bellows, frying-pans, shields, alms-houses and knives, hawking-bell, fish, acorn, scorpion, lobster, cap, heart, grasshopper, sun, star, bird, moon, cat, shield, crown and serpent.

Figure 1 - Ancient Chinese playing cards

Why use playing cards?

The School Run [1] list ten reasons why the use of playing cards can help in Maths:

1. Builds number confidence
2. Learning by experience
3. Encourages fluency
4. Offers endless possibilities
5. Helps to improve memory
6. Develop quick thinking skills
7. Great alternative for learning times tables
8. Encourage number talk
9. Teaches new strategies
10. Encourages risk-taking

Before I begin to share ideas of classroom practice, I must add a disclaimer. I do not claim to be the originator of these ideas and activities. I have purely collated ideas together that I have used in classes and believe them to be effective.

Classroom Management

Group Management

One of the simplest uses of playing cards is to randomly allocate groups. They are versatile with several possibilities:

Groups of 2's = partner up with the same number and colour

Groups of 4's = partner up with the same number (all 4's etc)

Groups of 8's = group two numbers together (all 4's and 5's)

Noise Management

Invest in a pack of giant playing cards and arrange one suit in numerical order. Explain to your class that you have an unacceptable number (say 7 out of 10) that pupils should not reach. Cards make a great visual for pupils when they are approaching a noise limit although you should be select in which classes to use this as some classes may see it as a target. Definitely not the idea!

Random Questioning

This one will need two sets of playing cards. Start by giving every pupil a card as they enter the room or tape playing cards to the desks of pupils. As you are going about your lesson, pose your question and then randomly select a card from the second pack which you keep on you. This person now should answer the questions. The benefits are twofold – one is keeping everyone engaged in the lesson as they may be asked next but selecting a card will take a second or two which will give pupils the appropriate pause to think about the question.

Multiplication Grid Races

Set up your playing cards as shown in the figure below. For this, Ace = 1, Jack = 11, Queen = 12, King = 13. This race can be played in pairs or trios. Pupils then turn over cards and race to complete the answers to the multiplication on the paper or whiteboard.

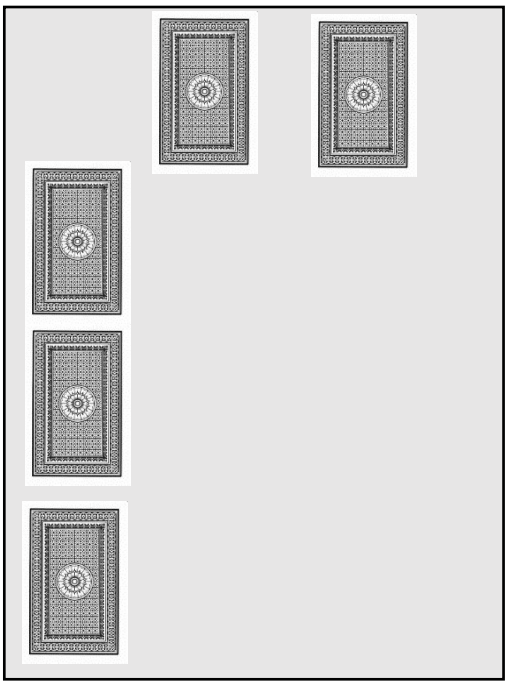

Figure 2 - Multiplication Races setup

To mix this one up, there is the option of making the red suits negative numbers!

Multiplication Shoot the Sheriff

One of the first games I was taught how to play was Shoot the Sheriff. A nice addition to a lesson; two pupils stand back to back with their "finger guns" at the ready. As they walk away, the teacher shouts a multiplication. The first pupil to turn around and "shoot" their opponent with the correct answer wins.

My playing card alternative is to provide each player with a random playing card before the battle commences. Same values as with the multiplication grid races. When the teacher shouts "shoot" players turn around and show their cards. The product of the cards is the answer which requires to be shouted out. Fastest correct answer wins! I normally restrict pupils to one attempt to avoid them shouting lots of numbers.

As before, there is the option of making the red suits negative.

Playing Card Wars

A simple concept with countless variations. For all of these, Ace = 1, Jack = 11, Queen = 12, King = 13. However, for some of them (i.e. exponent wars), removing the face cards may be advisable.

Integer Wars

Pupils are set in pairs for this one. They are dealt the cards in two piles. Pupils simultaneously turn over the top card of their pile so that both players can see each other's cards. The objective is to add the totals together. Red suits are negatives again here! The first pupil to shout the correct answer wins the two upturned cards. If there is a draw, then the cards can be placed to the side and the next round is worth all of the cards. Play continues until all the cards have been used. The person with the most cards in their position is declared the winner.

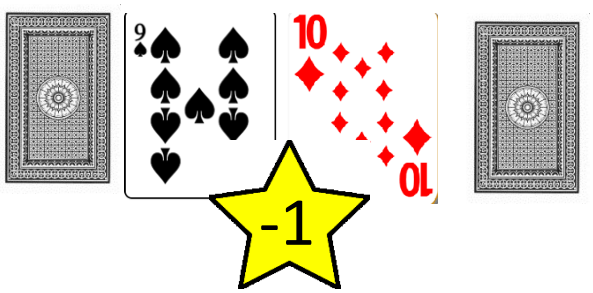

Figure 3 - Integer Wars Setup

Fraction Wars

Same values as above except four cards are drawn with one card over another. Pupil must then add, subtract, multiply or divide the fractions as per the teacher's instructions.

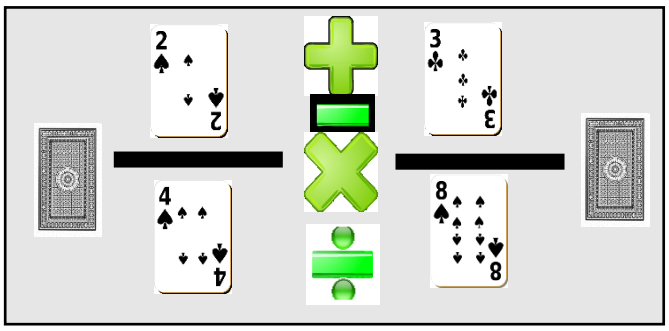

Figure 4 - Fraction Wars Setup

Exponent Wars

Again, the same values as before, four cards are set up as shown. This is definitely one where teachers may have to be very select in what cards are put in play depending on the ability of the pupils.

Mean, Median, Mode and Range

A simple of line of cards is placed on the desk. The number of cards can be varied depending on the difficulty required and this can be increased as required.

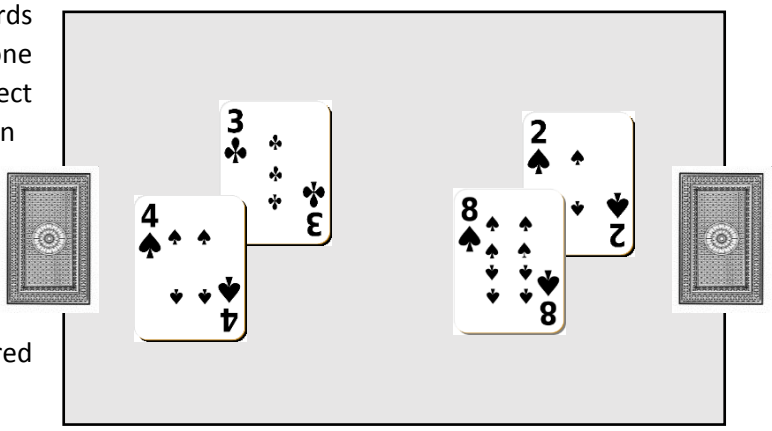

Figure 5 - Exponent Wars Setup

If numbers are in order, then cards at either end can be raised and the difference between them found to calculate the **range**.

To find the **median**, learners are able to physically turn over cards at either side to find the median, stopping when they have one left (the median) or two left which will require a middle number to be calculated. Allowing pupils to use concrete manipulatives to visualise the answer, can enhance understanding when transferring to abstract questions.

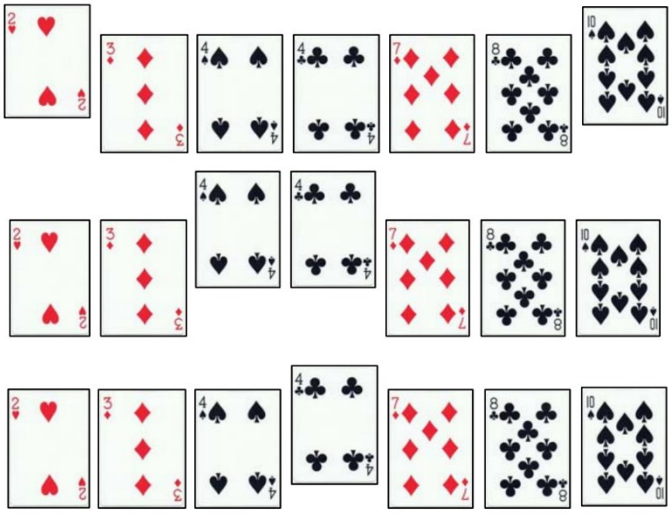

Figure 6 - Cards showing Range=8, Mode=4, Median=4 and Mean=5.4

Pondering Problems and Puzzles

One of the useful CPD activities I take part in is checking my Twitter feed and favourite educational bloggers. Here, you will find a wealth of educational talent with so much passion for mathematics and the teaching of mathematics.

It was here that I came across @msrubinteach who has a fantastic blog called “Everybody is a genius”. Here, she talks about an excellent game which is brilliant for first days with classes, last day of term or any time a bit of problem solving is required. It’s called “31derful” [2]. The object of the game is simple – out of the 52 cards in a standard pack, lay 25 of them in a 5x5 grid so that each column adds to 31. For this, A=11 and face cards=10.

This task is a staple for me with new classes and allows pupils to work with one another on what seems like a simple task, but many rich conversations have come from this.

This is just one of many problems, puzzles and games that can be utilised or enhanced using playing cards.

Conclusion

Remember that seven-year-old who loved a game of Solitaire? He now has a multitude of rich ideas to enjoy playing cards and utilise them to enhance the teaching of the subject he loves in a bid to pass on his passion for Mathematics to the next generation. If I could offer a purchase suggestion that would make this easier, it would be a visualiser. The ability to show pupils exactly what you want them to do by pointing the camera to your desk and modelling the correct method is priceless. This list is by no means exhaustive and if you have discovered any other ideas, share them with me @MrDrummondMaths and I will be sure to retweet them. As for the cards, local casino’s will often give away their old stock to schools if you ask nicely so there are no excuses for not giving a few activities a go with this versatile manipulative and if all else fails…have a game of Solitaire! It’s still as good as it’s always been!

Sources

[1] https://www.theschoolrun.com/10-ways-playing-cards-helps-children-with-maths

[2] http://everybodyisageniusblog.blogspot.co.uk/2013/09/first-day.html