

The use of the Spanish card deck in the Maths teaching process

Many times in our daily life It's required to know very well the mental calculation because the speed in life is so much that we need use it to solve daily situations such to check the change for the purchases, to calculate really the cost of products with discounts, the approximate amounts of food for a recipe, the handling of the time ... Those operations that we usually have to take into account without a pencil or paper and it takes a lot of effort.

Our job is due to the fact our students, despite being good at maths, had difficulties with that skill, and this could have a negative impact on their learning. This was our starting idea, but how could we improve it?

The answer arises because our center participates in the Erasmus + project "Maths for the million". One of the objectives of this project is to stimulate the development of a research with "environmental cards".

For this reason, we focus the use of the Spanish deck of cards for reviewing of multiplication rules. However, shortly after starting, we are realizing the possibilities of its use in the area of mathematics, above all because our students show a high level of motivation, the facility to adapt to different levels and the versatility that they say daily acquire the different contents and mathematical skills that are worked during the stage of infant and primary education.

In this document we try to make a small research about the characteristics that make of the habitual handling in the classroom of the deck of cards like an educational resource of first level in the area of maths. To achieve this objective, in a first part of these sheets we show the properties that the different educational games have, their use in the previous mentioned subject and, then we introduce the Spanish cards and the traditional games that people usually play at home; then we introduce sheets with some Maths games that we have developed their monitoring of those ones, and finally we provide some reflections about all the work carried out.

The study has been taken into account by teachers from our school, CEIP Maestro José Rodríguez Aniceto, from Arahal, Seville (Spain).

CHARACTERISTICS OF THE DIDACTIC GAMES

AT THE COGNITIVE LEVEL

- They encourage observation by means of increasing concentration and arouse curiosity.
- They help to think and develop thinking strategies.
- To increase the memory capacity.
- They favor the logical capacities, fantasy, imagination and invention.

AT THE EMOTIONAL LEVEL

- They stimulate creativity.
- They arouse interest in unknown and unlike subjects for kids.
- They help to develop habits and attitudes towards school work.
- They motivate the necessity to make decisions favoring a certain autonomy.
- They develop a critical, disciplinary, perseverance, tenacious and responsibility spirit.

AT THE SOCIAL LEVEL.

- They stimulate the social process by means of an integrating rehabilitative function and eliminating inequalities.
- They promote the exchange of personal relationships.
- They increase the cooperation and communication.
- They encourage the imitation of roles to be in contact with their environment.

CHARACTERISTICS OF TRADITIONAL GAMES

AT THE COGNITIVE LEVEL

- They encourage the development of oral language.
- They favor the observation of the behavior of elders.
- They develop the capacity of memory and knowledge of previous situations.
- Most games develop reasoning skills, decision making, etc.

AT THE EMOTIONAL LEVEL

- They develop fantasy and creativity.
- They promote the student's interest in other situations, other times, other experiences.
- They are played for the sheer pleasure of playing.

AT THE SOCIAL LEVEL

- They are transmitted from generation to generation.
- They are anonymous and universal.
- They have value as an anthropological and cultural study model.
- Causes the intergenerational relationship.
- They are easy to share.
- They produce social learning by having to accept a series of rules, known and agreed upon.
- They do not require expensive material.
- They are practicable anywhere and at any time.

Characteristics that every game must meet to be used in math class.

- It should have simple rules.
- Short development.
- Be attractive both in its presentation and in its process.
- Not be purely random they must be understood by the accused and susceptible to being mathematized.
- The intervention of the adult teaching person is necessary.
- Its issues should be based on:
 - The pleasure of playing.
 - Try not to eliminate the participants.

How to make the introduction of the games in the Maths class to be effective?

- We shouldn't wait magic results.
- They should be used in a systematic and planned way.
- They should be used as a normal activity not as a prize.
- The most important thing it's not the game in itself but the fundamental aspect is the solutions and generalization of results.

How to stimulate the success of the application of games with educational character:

- We shouldn't introduce the game as a job.
- We should choose the game and prepare the adequate ways to get the pupils compensate in an equitable way at the level of the students.
- Graduating the difficulty of the game to mathematical knowledge to another similar one.
- Once we have known the game, rehearse winning tactics.
- Make simple research on the right game to the level of the pupils.



The Spanish card deck.
Firstly the Spanish card deck consisted of forty cards (seven were numerical and three figures from each stick) but increasingly the version of forty eight adding two numeric cards of each stick. (8 and 9).
The 40 and 48 cards hand out 4 sticks (Golds, Swords, Clubs and Cups)
Each stick contains 9 cards from 1 to 9 and the figures Jack (10) Horse (11) and King (12).

The traditional card games in Arahal.

Arahal is a municipality located in the heart of the Sevillian countryside. Until not many years ago the card games were common in all houses. Nowadays, It's very difficult to find a house without a card deck. This is a game that people used to play with The family Becoming in real pastimes to cope with the cold winter nights or the long evenings.

SOLITARIES

Solitaries are one of the best strategies that we can find to facility the interaction of kid with the mathematical elements. In this type of games, as their name says, is for playing an only player. In our town is known as "tontona". All of them pursue without any exception, the ordering of all cards of the same family in ascending or descending way. Playing different types of solitaires, adapting the complexity of them to the same to the age of the students. (and although we are talking to the use of the Spanish deck), it is evident that cards can be created or edited with motives and designs based on the age of the players, and let to improve strategies to facilitate the interaction with the mathematical elements building learning by means of a constructive discovery. On this way we can underline:

- The training on the quickness mental training trough the development of fast answers.
- To foresee the consequences of making decisions.
- Creating problem solving algorithms.
- To increase the concentration skill
- All this is combined with the already mentioned features of adaptability, the ability to perform anywhere (even digitally) the low cost of materials.

To the mentioned features and advantages of this type of games could be attributed, maybe, to the limited socialization and interaction between the same pupils, however, we think that if a pupil pay attention on the peer game, this can be facilitated the knowledge of hat rules games. This allows to formulate hypothesis of a different choice that one who is really playing at that moment. This stimulates his later learning and can be extrapolated to other aspects of his own life



Games with 2, 3 or more players

THE DONKEY

Four cards should be handed out. The left cards should be face down. That one who is on his right throws the first card. The following must take another one of the same family. The winner is that one that gets.

THE DONKEY ON FOOT

It's the same game as the previous explained but the cards of the pile should be put in two standing groups. Supporting one against the other. When stealing it's required to be very careful not to leave it because in that case he should stay with all the cards.

THE CLOCK OR "COUNT DONKEY"

All cards are handed out between the players. They should be down in a pile. Each player places a card on the table saying ONE. The following should put another on singing TWO and so on until to reach the King. Returning again to begin counting. When the number of the card that you are was the same as that one who are singing, he must keep all the cards stand on the table. The one who is running out of cards wins.

THE HALF PAST SEVEN

The aim of this game is to try to reach the adding of half seven with the cards. It's played with 40 cards from one to seven with their points jacks, horse and kings are the half of a point. The bank gives a card to each player each one can decide to stop or ask for more cards. The winner is that one who takes 7 and a half.

THE CINQUILLO

The game consists of ordering all the cards of the same family in ascending or descending way from 5. All cards are handed out among the players. If somebody can't place any, he will lose turn. The winner is that one who runs out of card.

THE BRISCA

We need to hand out three cards per player.

After dealing them, the following card that you can find is that one who tells us the winner family. It's placed on, behind a pile with the left cards down steal.

The cards have the following values: As(11), 3 (10), King (4), Horse (3) and Sota (2); the rest of the cards have no value, but they will always have priority the higher the number; In addition, he will always win the trump suit.

We can start the game throwing a card, the following player can throw the card they want.

If the first player has thrown a trump card, the rest will win if he casts them of the same suit (and a higher value); if the first one draws a card from another suit, the rest will win if he casts them from that suit (and higher value) or from the suit of the winning family.

The player who wins each trick is left with the cards.

When a trick ends, players draw a card from the pile (starting with the winner - who will start again - and moving to the right)

The game will end when there are no cards left. Now we will proceed to count the points. Obviously, the one who has obtained more wins.

OUR DIDACTICS GAMES

Activity: Perform fractions with numbers of the deck	Level: 3rd and 4th
Material: Spanish deck (all cards except wildcards)	
Game development: <ol style="list-style-type: none"> Half of the deck is distributed to each player. Both players draw a card at the same time. The largest number will be de denominator and the smaller the numerator The first one to correctly say the fraction that form both cards, gets to keep the two cards. The winner is the player who, once the deck is depleted, has more cards. 	Objectives: <ul style="list-style-type: none"> Practice the formation of fractions Enhance cognitive abilities. Improve concentration. Develop mental agility. Encourage language development.

Activity: Odd and even numbers	Level: 3rd to 6th
Material: Spanish deck Number of players: Two	
Game development: <ol style="list-style-type: none"> All cards are distributed between the two players. Both players draw one card at a time. The first one to say if the result of the sum of both cards is odd or even takes the two cards. The winner is the player who, once the deck is depleted, has more cards. 	Objectives: What do we intend to achieve? <ul style="list-style-type: none"> Enhance cognitive abilities. Improve concentration. Develop mental agility. Encourage language development. Improve mental calculation *You can also perform other operations such as subtraction or multiplication

Activity: Pair game	Level: 5th and 6th
Material: <ul style="list-style-type: none"> Spanish deck and Maths notebook. Number of players: <ul style="list-style-type: none"> Four, although it can be adapted to any number of players. Ideally, various groups are made throughout the class so that they can answer the questions. 	
Game development: <ol style="list-style-type: none"> All cards are shuffled and placed randomly face down on a table. The first player picks up two cards and places them face up. If they are a pair * remove them and try again; if they are not, place them upside down and the turn takes place. The player with the most pairs wins. When the game ends, the group members have to answer the following questions **: <ul style="list-style-type: none"> How many pairs does the winner have? How many pairs did the second one get? What is the difference between the one that drew more and fewer couples? Knowing the previous questions, the rest of the groups have to find out the pairs of the 3rd classified (it is important that all the members of the group can correctly explain the solution). 	
Objectives: What do we intend to achieve? <ul style="list-style-type: none"> Train the visual memory. Increase short-term memory Enhance cognitive abilities. Improve concentration. Develop mental agility Encourage language development. Find thinking strategies to solve problems. 	
Notes: <p>* The game can become more complex if to form a pair the cards must belong to specific clubs; for example: golds with cups and sticks with swords.</p> <p>** The questions can be modified to adapt them to the number of players or make them more or less complex.</p>	

Activity: Merge numbers to get a given one.	Level: 5th and 6th
Material: Spanish deck (all cards except horses and kings, the value of the jack is zero) and Maths notebook. Number of players: Any	
Game development: <ol style="list-style-type: none"> Two cards are drawn and a number is formed with them. 6 more cards are drawn: Combining these numbers using (+, -, x, :) you must obtain the closest (or the exact) one. It is necessary to use all the numbers of the 6 cards They must write all the operations in their notebook. When the result is correct, they should put it as an algebraic expression. 	
Objectives: What do we intend to achieve? <ul style="list-style-type: none"> Improve mental calculation. Decompose numbers. Apply the properties of operations with natural numbers. Apply the rules of priority in operations. Work with the use of parentheses. Write a number using combined operations. 	

Activity: Compare fractions	Level: 3rd to 6th
Material: <ul style="list-style-type: none"> Spanish deck (all cards except wildcards). Cards with mathematical signs <, >, =, . Two pencils and class notebook Number of players: Two	
Game development: <ol style="list-style-type: none"> The two pencils are placed, one next to the other (they will be the lines of the two fractions). Place two cards of the same value in the numerator, leaving the denominator free. The rest of the cards are shared among the players. Both players draw a card at the same time and place it as denominator in each fraction. The player who has the turn has to read each of the fractions and then place the corresponding sign between them. Both players write the fractions (with the sign) in their notebook. 	Objectives: <ul style="list-style-type: none"> Enhance cognitive abilities. Improve concentration. Develop mental agility. Encourage language development. Practice the formation of fractions. Compare fractions of equal numerator or denominator.

Activity: Double, triple ...	Level: 5th and 6th
Material: <ul style="list-style-type: none"> Spanish deck: cards from 1 to 4 and the figures. The numerical cards have their own value; the jack multiplies by 2, the horse by 3 and the king by 4) Number of players: 2 to 4 players	
Game development: <ol style="list-style-type: none"> The 28 cards are shuffled and distributed to the players (it is not essential that everyone has the same number) The first player, with the deck in one hand, face down, takes the first card and places it on top of the table. The second player draws another and has to do the same operation. <ul style="list-style-type: none"> If this player draws a numerical card, they will have to sum it to the card that was previously on the table. If the player draws a figure, they will have to perform the corresponding multiplication The rest of the players should be attentive to check that they have not made a mistake. This continues until all cards are finished. Now we must operate with the resulting number (it can be done at the group level or the whole class): <ul style="list-style-type: none"> Write it with numbers and letters correctly. Decompose according to the order of units. Decompose it into powers of 10. Carry out approximations to different units of order. 	
Objectives: What do we intend to achieve? <ul style="list-style-type: none"> Work on the concept of number. Enhance cognitive abilities. Improve concentration. Develop mental agility. Improve mental calculation. Decompose natural numbers according to the positional value of their figures. 	
Notes: <p>* In this game there are no winners or losers.</p> <p>** Although mental calculation is used initially, as the numbers are larger, it is necessary to use the notebook.</p>	

Activity: Find out the factors through a product.	Level: 3rd and 4th
Material: Spanish deck (all cards except wildcards). Number of players: Three	
Game development: <ol style="list-style-type: none"> All cards are distributed between two of the players. The other player will be the "judge". The judge will take a card from each player, without them seeing what card it is. Next, the judge will indicate the result of the multiplication of the numbers of both cards, so that the first to find out what the two factors are will take the two cards. The winner is the player who, once the deck is depleted, has more cards. 	
Objectives: What do we intend to achieve? <ul style="list-style-type: none"> Enhance cognitive abilities. Improve concentration. Develop mental agility. Encourage language development. Practice of multiplication. 	

OUR OPINIONS



I like playing with the card deck because I like guessing numbers and working with them to create new numbers (Antonio, 11 years)

If we play with the deck of cards, we play with our friends, and my mom says it's better than playing with the Play Station, and we are learning maths too (Rocio, 10 years)

It's the best moment of the day when playing with cards. Its funny. I like maths using cards. (Daniel, 9 years)



We consider that playing with the Spanish cards is a good moment to be with the family. All together playing and at the same time using a review mathematical concepts.

Playing with the card deck is it to go back to our childhood. Its another resource, a traditional game opposite to tables and electronic games.



My daughter has always had troubles working with multiplication tables and different mathematical operations; playing whit cards has been a good and fast resource to understand and acquire these operations.

"Its use in the classroom has been fundamentally a work of mental calculation and numbering combined with the knowledge of an element of our culture such as the Spanish deck and with an activity that through the game allows our students to work in pairs or groups and therefore socialize with their peers".

"The child who can solve the problem has to explain to the rest of the class how he/she has done, so we are working at the same time oral expression".

"Sometimes, the class is very noisy when we are working this sort of activities, although the noisy level is bearable because the activity lasts 10 or 15 minutes".

"The use of the deck in Maths is an activity that has aroused the interest of our students from the beginning. Taking into account the difficulties posed by this area, adding a motivational element to those already existing within class dynamics is always positive".

"If the activity is too long, pupils start to be tired, discussing or they want to change to another game, so it is the right moment to finish the activity".

CONCLUSIONS

<ol style="list-style-type: none"> High motivation of the students. Work of mental calculation. Activities interacting with classmates. Self-evaluation of the activity. Use of an element typical of Spanish culture. Variety of games to work the same aspect. Being a very cheap resource is affordable for all students. It is a resource that does not cost effort to carry it in the backpacks since it is light and occupies little place, which avoids frequent forgetting. It allows to work in a systematic way in the time given the numerous alternatives offered by the resource. Dynamic activities that can be developed in a short period of time allowing to work several aspects in a short period of time. 	
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<ol style="list-style-type: none"> Games that demand a good level of concentration so they get tired soon. So that this does not happen it is important to change the game constantly so as not to get bored. We started developing the games orally. Given the need to say the results or the numbers created as soon as possible, it caused that when playing all the students at the same time there was excessive noise in the classroom. Given this situation, the variant of writing the result in a notebook or template has been considered. Thus we get a more relaxed atmosphere that favors work. At first, the ignorance of the deck by some children. This aspect was solved with a brief introduction of the teacher and the use of it through the games. 	
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