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# Teachers' guide to implementing gamification in Maths
# Erasmus + Project
# „GAMIFICATION IN CLASS - challenges and rewards"

Project ID: 2020-1-LT01-KA229-077970

GAMIFICATION IN CLASS - challenges and rewards

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| Domain/ Area/ Subject | Maths |
| Topic | Egypt |
| Group age | 10 years old – 3rd grade, Scouts class |
| Location: | the activities took place in the classroom |
| Period of time/lesson number : | |
| | The project took place between 6th September – 30th November |
| The purpose and objectives of the lesson | Using numbers in doing calculus:<br>1.1 Recognizing the numbers between 0 – 10 000<br>1.2 Comparing the numbers between 0 – 10 000<br>1.3 Ordering the numbers between 0 – 10 000<br>1.4 Doing addition and subtraction with numbers between 0 – 10 000 |
| Contents | **Numbers between 0 – 10 000**<br>- how they are formed and written<br>- comparing, ordering and math rounding them<br>- how they are formed, written and read using roman letters |
| | **Addition and subtraction of the numbers between 0 – 10 000, with and without going beyond order**<br>-addition and subtraction; addition properties<br>-finding the unknown term through different methods (going backwards method, the balance method) |
| Narrative: | The project started on the first day of school.<br>The students were welcomed with a specially decorated classroom based on the chosen topic: the ancient Egypt<br>On the first days the students got acquainted with the chosen topic, they talked about the knowledge they had on the topic and they also wrote down the information they wanted to acquire. |

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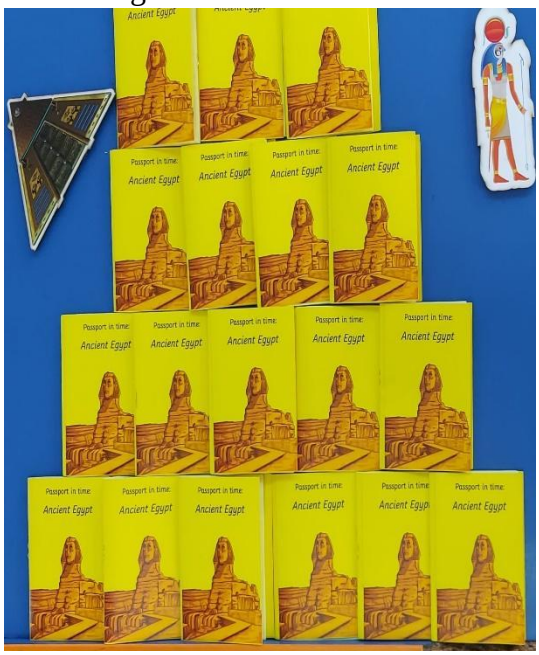
| I gamified all the learning units as follows: | 1. Numbers between 0 – 10 000 – ***The room of supplies***<br>2. Addition and subtraction of the numbers between 0 – 10 000 – ***The room of the weapons***<br>3. Multiplying the numbers between 0 – 10 000 – ***The room of the mummies***<br>4. Dividing the numbers between 0 – 10 000 – ***The room of the offerings***<br>5. The order of the operations and how to use parenthesis – ***The queen's room***<br>6. The fractions – ***The Gods' room***<br>7. Geometry elements and measuring elements – ***The Pharaoh's room*** |
| The students were divided into four teams: | 1. Cleopatra's team<br>2. God Ra's team<br>3. Pharaoh Ramses' team<br>4. Pharaoh Keops' team |

The students received badges with a picture representative for their team. During the project and based on their school performances, they could change teams, too.


Each team got a mascot as well. This was offered each day to the student who gave the most correct answers or represented the best his team or showed an excellent behavior during the working tasks. At the end of each day that student could take home the mascot and bring it back the following day.

In order to reward their learning and new acquisitions, I used score charts and even passports.

At the end of each activity, all students received a card which they stuck onto their passports. On those cards there were information about the people from ancient Egypt. Thus, at the end of each learning unit, students discovered information such as why people built their houses on the banks of the Nile, what their typical food was or why cats were worshipped in Egypt. My purpose was to combine all the mathematical notions with general knowledge.



**Missions/challenges :**

**Tasks**

***I Room of supplies***

1. The restauration of the library from Alexandria
   All students received carton scrolls, colored paper and glue
   Each team had to fulfil a different task:

   - Cleopatra's team: to write even numbers between 0 – 10 000
   - God Ra's team: to write uneven numbers between 0 – 10 000
   - Pharaoh Ramses' team: to write strings of numbers based on Fibonacci string
   - Pharaoh Keops' team: to write multiples of thousands of numbers between 0 - 10 000

   After having written all their numbers, students glued the papers on the carton and created "papyruses" which then were laid on the shelves from the classroom library.


2. **<u>Superiority, equality, inferiority</u>**

   After having open the mystery box, students discovered many cards with numbers between 0 – 10 000. Each team delegated a representative, which then had to go on a duel with opponents from the other teams. It was a true "battle" between the Romans and the Egyptians. There was one rule: each student who took part in the duel had in his hand some cards with numbers. If his number was lower than the opponent's, he had to take a bow. If the number was higher, he stood straight, waiting for his opponent to bow. If the numbers were identical, they had to shake hands.


3. **Gathering the crops**

The mystery box revealed the next task: look in the bale of straw from your classroom for some chips with apples on them. There will be different exercises on those chips. Solve the exercises carefully and then stick the apple on the giant basket from the whiteboard. For each apple, you will get a glass full of real crisps, which you can eat, at the end of the activity. Good luck!


4. **<u>The laurels of victory</u>**

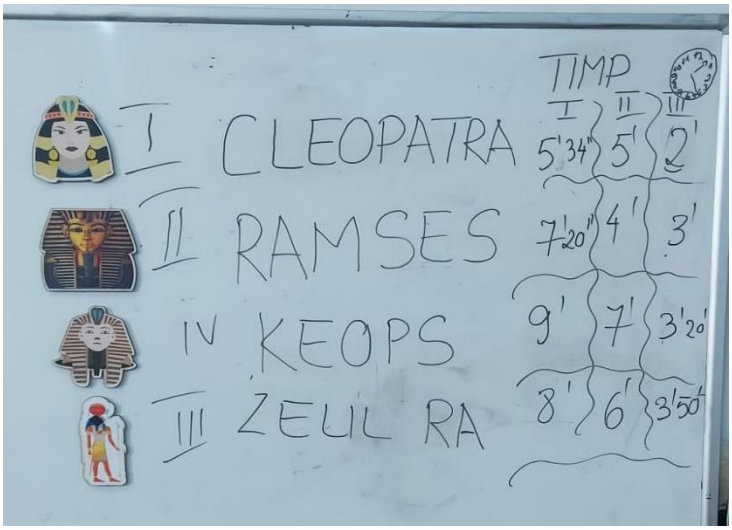
   The students received chips in the form of papyruses. There were exercises on them, which demanded students to identify Roman numbers and transform them into Arabic numbers. The team, which solved most of the exercises from the papyruses, won. At the end of the activity, the members of the winning team received a reef made of willow branches.


***II The room of the weapons***

1. **<u>Observe, conquer and build!</u>**

Students received chips in the form of bricks. They had to read the exercise, solve it correctly and then lay a construction cube in such a way as to build a pyramid at the end of the activity.


CLEOPATRA
RAMSES
KEOPS
ZEUL RA

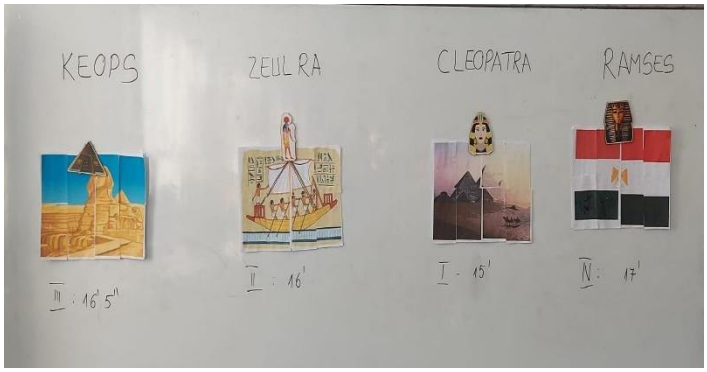

TIMP
I
II
III
I CLEOPATRA 5'34" 5' 2'
II RAMSES 7'20" 4' 3'
IV KEOPS 9' 7' 3'20"
III ZEUL RA 8' 6' 3'50"

2. **Find the missing pyramid!**

Big construction pieces were hidden within the classroom. On them there were stuck exercises with addition and subtraction with numbers from 0 to 10 000. Each time students found a piece, they returned to their desks, solved the exercise and then they took the cube they had found and place it at the front of the classroom in order to build an enormous pyramid at the end of the activity. Each team received a lot of chocolate at the end of this activity!


3. **Discover the mystery!**

On their desks, the students found the pieces of a mathematical puzzle; on the back of the pieces, there were exercises with unknown terms and on the whiteboard, there were numbers designated to each piece of the puzzle. After each correct identification of the unknown term, students went to the whiteboard and stuck the piece on its correct place. At the end of the activity, students could discover a typical ancient Egyptian image (pyramids, Egyptian flag, the Sphynx).


**Tools:**

Passports and rewards, mascots, worksheets, a box for mission messages, construction cubes, willow reefs, a bale of straw, a pyramid with the names of all rooms designated to the learning units, charts to keep track of the students' progress, badges, chips, educational games about Egypt, magnetic whiteboard, magnets in different Egyptian shapes, crisps, glasses, bags, baskets, colored paper, photo frame, pencils, bookmarks, scrolls of paper etc.

**Rewards:**

1. Badges
2. A day with no homework
3. Watching a movie
4. Extra points at a test paper
5. 5 minutes more on the break
6. Changing place with a student from another team
7. Sweets
8. Receiving home the mascot

**Feedback:**

In order to implement the project I started designing it two months before the start of the school year. Many materials were necessary and a lot of time invested in creating them.