Lesson Plan  
Algorithms and Functions

Computational Thinking

linha curta

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# Summary

1. Contents:

Algorithm concept (taught through activity, which groups will be these) and function (which will be the performance of the basic mathematical operations).

1. Topic/unity of study:

Computational Thinking.

1. Grade:

4th and 5th grade elementary school students.

1. Objective:

The main objective with this activity is to teach in a fun and enjoyable way computing concepts such as algorithms and functions.

1. Activity Schedule:

i. Presentation about the concepts: 10 minutes;

ii. Groups organization: 5 minutes;

iii. Activity fulfillment: 30 minutes;

iv. Knowledge validation: 15 minutes;

# Implementing

## Background of knowledge

Elementary School students in 4th or 5th grade, which have acquired the knowledge of basic operations.

Practice

1. Preview

1. To the teacher:

Teachers should introduce the basic computing concepts to students in a way that excites and inspires them. After the first meeting with computing students, the classroom teacher must give the students the initial overview of algorithms, therefore, to apply such a lesson plan, that means the teacher must have previous knowledge about these concepts (in the complementary material topic). The teacher must write the papers with the instructions for movement (i.e., which guide he should follow), and also write the papers with the two values that will be used in the exercise.

2. To the student:

The student must collaborate with the teacher and the guides, so that the activity can be executed ensuring the best experience and learning for everyone.

Step by step

i. After explaining the concept of algorithm, the students should be splitted into groups, each being represented by a basic math exercise.

\*P.S.: it is up to the teacher's if the group will choose its own operation or if it will be defined by the teacher, as well as how the groups will be formed.

ii. All groups will receive their first paper containing the name of one of the guides that will be spread around the school building, at previously defined locations.

iii. Each group should follow the guide whose name is written on the paper.

iv. Upon reaching the designed guide, students will receive two values, which they will need to calculate the group's mathematical operation.

Guided tasks

Once the group has addressed a guide, they should explain the concept of function within the execution of an algorithm, and give numerical values to the group (which will become a function within the algorithm that must be executed).

If the group answers the question correctly, they will receive the next paper with the name of the guide, indicating their next instruction.

If the group answers the question wrongly: they must start the program/algorithm again from scratch, returning to the guide the papers with the instructions already achieved, and then receive new ones.

1. Independent tasks

The students must execute the pre-established math problems with the values given by the guide. In this stage everyone in the group can participate.

1. Finishing the tasks

Once the students have obtained all the papers they will have their algorithm done, thus finishing the activity.

At the conclusion of the activity, an understanding check will take place (next topic).

1. Verifying the results

At the conclusion of the activity the students will be asked questions about the concepts: algorithm and function presented in class, with questions such as the example below:

1. Describe an algorithm that you realize within your daily life.
2. Have you been interested in the content presented in the class?
3. Have you been interested in the computing concepts presented in this class?
4. Have you learned something new?

\*P.S.: about this topic the teacher is free to develop other questions for the students.

# Resources

1. Resources that will be used to prepare the instructions: paper and pen.
2. Provided resources: links for learning the concepts that will be used during the activity, which are available in the topic "Supplementary Materials" within this document.

# Supplementary Materials

1. Algorithm concepts:
   1. <https://www.significados.com.br/algoritmo/>
   2. <https://www.tecmundo.com.br/programacao/2082-o-que-e-algoritmo-.htm>
   3. <https://www.youtube.com/watch?v=z1XTcKKRbKM> - Diolinux
2. Function concepts:
   1. <https://www.significados.com.br/funcao/>
   2. <https://ebsouza.gitbooks.io/logica-de-programacao-para-principiantes/content/funcao.html>
   3. <https://www.youtube.com/watch?v=6xKnWwGyhBM> - Abre Chaves

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