

Teacher Guide

Welcome, Professor!

In your daily interactions with teenagers you may have noticed that many of their activities are developed in a messy way. It is essential that these activities are aimed to develop a more logical thinking in the students with the help of flow charts.

You must be prepared with real life examples, so that you can understand the difference between doing things in a disorderly manner and doing the same activity in an orderly and, above all, step by step way.

It is not necessary for students to be experts in programming or to study engineering; those students who have other study concerns can also develop a more structured thinking.

Explain the students the importance of flow charts in software development and that they can also be used in other real-life activities or in other areas of expertise.

You should be careful in explaining the operation of cycles or repetitions. It is important to point out the difference between the types of cycles and to clarify the considerations that must be taken into account so that a cycle does not run indefinitely. Use an example before the development of the cycle activity.

The materials used in the lesson activities include:

- White recycled sheets of paper.
- Sheets of material such as foamy.
- Recycled materials that allow us to create a flow chart.
- Erasable markers.
- Surfaces in which one can write and erase.
- An open deposit.
- Coins of different denominations.

Here you will find all the activities to be developed with the students:

Activity 1

To develop this activity, we can start making the following questions: What shapes do you know that are used in flow charts?

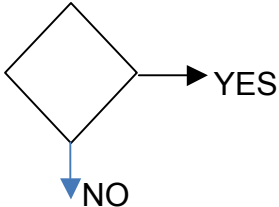
The activity to be developed is “to research the shapes that are used to develop or create flow charts, and to create or design them with cardboard or any other recycled material that allows to identify the shapes that are found.”

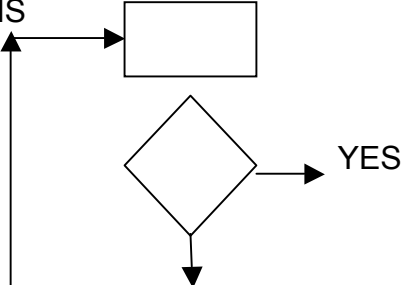
Example:

START or END OF PROCESS 

PROCESS or EVENT 

DATA INPUT OR OUTPUT 

SELECTION or CONDITION 

CYCLES OR REPETITIONS 

← NO

Activity 2

To start the activity, we need to answer the following questions:

What happens if we don't follow a logical set of steps in an activity?

What is the difference between the steps of a daily activity and the steps to be followed in a program that makes the sum of three numbers?

What happens if we don't study before an exam?

In the classroom or in the area that you choose, you should develop the following activity: "To create a flow diagram of the preparation to take a test of any subject." We can make the following question: What do we need to study for that exam? And among the things we need, we can find the following: to check our study material, to check the right place to study, to decide if studying with music or without it, and make a schedule to study, rest and eat.

Part of the practice is to ask the students to create and identify the shapes in a creative way, by using any type of recycled material that allows a clear identification of each figure. It can also be done by means of personification.

Activity 3

To develop this activity, start by summarizing the previous activity, and making the following questions: In what other activities can flow diagrams be applied, outside the creation of computer programs? What would happen if we don't take the appropriate precautions to transport from the house to the resort?

The activity to be developed is: "To create a flow diagram linked to the process of taking the appropriate precautions to transport from the house to the resort, checking the car, tools, spare tire, etcetera."

Part of the practice is to ask the students to create and identify shapes in the most creative way, by using any type of recycled material that allows to identify every shape clearly. The construction can also be carried out by means of personification

Activity 4

To develop this activity, start with a brief summary of the previous activity and make the following questions: In what other activities can flow diagrams be applied, outside the creation of computer programs? What would happen if we don't take the appropriate precautions for a picnic?

The activity to be developed is: "To create a flow diagram linked to the process of a picnic, reviewing weather conditions, places, road conditions, routes, means of transportation, and something very important: our budget, etcetera."

Part of the practice is to ask the students to create and identify shapes in the most creative way, by using any type of recycled material that allows to identify every shape clearly. The construction can also be carried out by means of personification

Activity 5

We can start this activity with the following questions: How can we use the repetition symbols (cycles)? How can we handle conditions in a flow diagram?

The activity to be developed is: "To create a flow diagram that allows to classify and count the coins of a certain denomination that are being taken from a general deposit. At the beginning of the chart, there must be an open container with coins of different denominations. These coins must be analyzed and classified; the process must also count the amount of coins left in the container until it is empty. This allows to handle conditions or ask the coin denomination, and allows us to handle the different cycles until the deposit is empty."

Students must be asked to be creative by developing the chart in an innovative way or by means of a game, instead of using the board or any technological means. The flow chart can be made on the floor with any erasable material, or with any recycled material.

Thanks for the time you spent on this lesson. We are at your service to answer any questions or comments that may enrich the lesson. Please, send them to the following email address: rochoa@tecmilenio.mx

Good luck!