Get Ready

Materials:

- 30 envelopes,
- 30 post-it notes,
- colored felt tip pens.

Preparation:

1. Mark the symbols on the envelopes. There will be one symbol (rectangle, circle, triangle, pentagon, diamond) per six envelopes.
2. Write a number between 1 and 6 on each envelope with the same symbol.
3. Write down some numbers on the post-it notes and put them in the envelopes in the order shown in the attachment: Envelopes with the symbols.

Photos showing preparation of envelopes for one of the symbols:



Experiment

The students crack a letter-number code.

Materials:

- cards (post-its) with symbols of geometric figures,
- envelopes with figures (Instructions - preparing code sets for groups, you will find in Get Ready section).

For each team:

- instruction for groups "how to crack the code".

Prepare cards for students.
Prepare as many post-it notes as there are students in the class, divide them into 5 groups. Draw the same geometric shape on all the post-it notes from the same group (as on the envelopes). The students draw cards at random. Those who draw the same geometric shape form a team.
The task of each team will be to find envelopes with the right shape and then decipher the password.

Explain to the students the goal of the task – to crack a letter-number code. Hand each group instructions prepared for it.

> In order to decipher the code correctly the students must familiarize themselves with the rules used to encode the password and follow these rules carefully. Each letter of the password can be substituted by a number. The numbers are concealed in the envelopes (there is one number in each envelope). The envelopes containing numbers encoding a specific password are marked graphically (e.g. with a triangle) as well as numbered in a specific way: in envelope no. 1 you will find a number "concealing" the first letter of given password. The second envelope contains a number concealing another letter of the password, etc.

Procedure:
From all the envelopes the students choose only those which have the same graphic symbol.
Order them in the correct series (from envelope no. 1 up to envelope no. 6).
They must assign a letter to a particular number according to the rules given on the help card.
Decipher the password.

If the students know these rules and in spite of this they come up with the incorrect password (it will not be the name of an animal), they must check once more whether they have deciphered the coding rules correctly.

After cracking the code they come up with the following passwords:
Rectangle - TURTLE
Circle - DONKEY
Triangle - MONKEY
Pentagon - LIZARD
Diamond - RABBIT

Instructions

Talk

The students draw animals, whose names have been put in code and then they define their general characteristics.

Materials:

- sheets of A4 paper for each student,
- drawing instruments.

Each student makes a drawing of an animal, the name of which represents the password for his or her group's code. The drawings can be simple outlines.
The students then gather together all the drawings and put them in one place (attach them to the whiteboard or arrange them on a table). They should examine all of the pictures and consider the different characteristics of these animals.

Once they have looked at the pictures discuss the characteristics of the animals.
Ask the students:
What do the animals shown in the drawings have in common?
What characteristics do all animals have in common (not only those shown in the drawings)?
How do the animals in the drawings stand out from others?
If you hear the word "animal" what image comes in your head?
How do we know that animals are the way they are?

Is there something which is an "animal" in general and possesses the features of all animals?

What other general terms are there? Why do we use general terms? Why do people think in general terms? What does logical thinking consist in?

> You can choose a different category of things or phenomena which you could analyze in terms of its features and organizing general ideas. In such a case, the students will draw different pictures related to the new categories they are analyzing, e.g. buildings, cars or plants.

Instructions

Discussion

The students formulate their own arguments that will lead them to making an informed decision.

Materials:

For each student:

- post-it notes,
- pen,
- graphics featuring four symbols (dog – yes, dog – no; cat – yes, cat – no).

To attach to the whiteboard:

- 4 pictures of symbols (dog, crossed-out dog, cat, crossed-out cat).

Ask the students:

How do we know that a decision we take has been properly thought out?

What is an argument?

How important is general thinking when making informed decisions?

After the students have given suggested answers to the above questions, tell them the story of Alex.

Alex's story

Alex is 9 years old. He lives with his parents and his four-year old sister. Their apartment has two rooms and is on the top floor of a multi-story building. The boy dreams about having a a four-legged friend at home. One day his dream comes true – they are going to have a pet.

Alex wonders what kind of pet can live in his home and whether it will feel comfortable there.

The boy has in mind a kitten and a dog (labrador).

Give students the pictures with the four symbols.

Stick the same pictures, only now printed on separate sheets of paper, on the whiteboard.

The task of the students is to make up at least one argument for and one argument against having a particular pet (a cat and a dog) at home. They have five minutes to do this The students write down their arguments on the post-it notes and glue them to their sheets of paper.

Once they have completed the task, get them to read out their arguments in turn and stick a post-it note in the appropriate place on the whiteboard.

> When one student presents his argument, another might hold the opposite opinion. This is a perfect moment for a discussion.
> To make sure this task does not go on too long, after each argument is given ask how many other people have written down the same argument and ask them to put their post-it notes in the right place.

After you have finished, ask the students:

Is a choice that has been carefully thought out always the choice with the most pros (fewest cons)?

Are all pros and cons equal in relation to one another?

Why do you think so/don't think so?

Which pro is the most important for you? Why?

Which is the biggest con? Why?

Does one con outweigh a pro?

Is one pro more important than a con?

Taking into account all the arguments for and against can you make a decision on the same issue that Alex has to decide on?