Experiment

The students crack a letter-number code.

The relationship between logic and a code.

What is a code? A code can be defined as a series of numbers and/or symbols constituting a cipher providing access to some content. According to another definition, a code is a way of recording a text using a system (any rule or collection of rules) of code-words used with the aim of concealing information.

To uncover (decipher) encoded content we have to know how it has been encoded (encrypted). In other words, we must know what rules were used to encode the content. If we follow these rules consistently we will be able to decipher the content correctly.

Conclusions

The students sum up the task they have performed and draw conclusions on the theme of

Logical thinking – thinking based on certain rules.

In a slightly metaphorical sense, logical thinking may be understood as "deciphering" or ordering the world as well as the thoughts "swirling around" in our minds. Logical thinking makes it easier for us to classify, organize and predict reality. It is an important tool for decision making; it works like a magnifying glass that allows us to see something up close and observe its details – its pros, cons and consequences.

The similarity between decoding a password and logical thinking is that in both cases one follows certain rules. If we think in accordance with the rules of logical thinking (in accordance with the laws of logic), we can be sure that our thinking (e.g. making conclusions, substantiating) is logically correct.

Example:
If we want to draw the logically correct conclusion from the statement "it is true that only some codes are easy to break" we need to determine which logical rules lie behind the statement "only some" One of the logical rules connected with such a statement stipulates that if we regard as true the statement "only some As are B", this means that we must also accept as true the proposition "it is not true that all As are B" ("it is not true that all codes are easy to break").
Knowing this rule, we can be sure that when we say "since it is true that only some codes are easy to break", it means that the proposition "all codes are easy to break" is false. If we thus regard the second proposition as false, it would mean from a logical point of view we are thinking incorrectly.

The proposition "only some codes are easy to break" is in accordance with the facts and is true in the empirical world. However, in logic it is possible to assume the truth of a statement which does not have to be true in fact. For example, consider what will logically result from the proposition "all dark-haired people are great sportsmen". The purpose of logic is to test the correctness of logical thinking. To practice logic, we don't have to restrict ourselves solely to using those propositions which can be confirmed in fact.

Talk

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

Organizing general ideas.

We think logically when we identify and examine different features of different objects and thanks to this we can compare, organize and put in order these things. When we organize our thoughts about these objects on the basis of some rule, i.e. the general criteria common to many objects (in the case of the animals shown in the drawings, for example, the criterion is that of possessing a tail), we begin to think about them logically.

Discussion

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

Argumentation – the process of presenting arguments – a system of propositions, composed of premises and conclusions.

An example from the exercise: Alex should not have a dog/cat at home (conclusions), since the flat is too small for animals to live there comfortably (premise).

Characteristics of informed decision making – our exercise includes those elements that constitute informed decision making.

- the premises for a particular decision. In the case of our task, the premises are the suggested consequences of a potential decision (organized henceforth into advantages and disadvantages),
- the existence of premises of a different kind – concerning the different sides engaged in this decision (consequences for the animal, for members of the family, for the person making the decision),
- An assessment of the premises – determining the value of the premises; is one premise (a potential consequence) more important or less important than others or is it the most important/least important.

Conclusions

The students draw conclusions regarding the process of rational decision making.

Rational thinking – in order for thinking to be called rational thinking, at least three formal conditions must be met: a precise formulation of the issue; consistency in reasoning and the absence of internal contradiction; as well as empirically substantiated (demonstrated in experience). Rational thinking is based on proper reasoning and drawing the right conclusions. We regard as rational those forms of thinking which accord with the principles of logic or the theory of probability.