INDOOR AND OUTDOOR ACTIVITIES REALIZED UNDER CONCEPTION OF INQUIRY BASED SCIENCE EDUCATION

INDOOR ACTIVITIES




The Target...
...is aimed to facilitation the teachers´ work. We are trying to develop situations which are possible to be realized right in a classroom and are suitable for children from preschool age to upper level of primary school age. That is why the methodological background is elaborated and it is describing which way the situation can be realized regarding the specifics of the chosen cognitive level.

The principles...
… to use everyday materials,
… to deal everyday's phenomena the children have experience with,
… forcefully aimed at development of cognitive skills,
… to facilitate development of IBSE from preschool age.

The example...

STIMULATING SITUATION: Take two squared mirrors and put them together on their borders, so there is a changeable angle between them. Put a coin between the mirrors. Change the angle between the mirrors and count how many coins you can see in the mirrors.

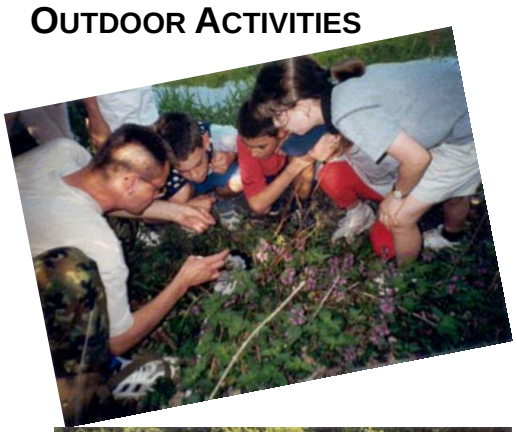
CLARIFYING THE CONCEPTION:

1. level (*This is empirical level. While answering these questions, pupils still can help themselves with materials. They are searching for more empirical information*.) What was the greatest amount of the coins you could count? Try to describe the mutual position of the mirrors in a case you can see the most coins and in the case you can see the least coins. Are you able to create more than one coin image with only one mirror? In what position of two mirrors you cannot see any image even the coin is close to the mirrors? How the mirror makes the image (what are the differences between real coin and the image of the coin)?

2. level (*This is causal level*. *While answering these questions, pupils would not have a possibility to do anything with used materials, they should make only predictions*.) Would you be able to create more than one coin image with only one mirror. Try to describe your answer (in both cases – if you think that it is possible and also if you think that it is not possible). Can you recognize correlation between amount of coin images and the coin size (Is it possible to create more/less coin images with bigger/smaller coin?)? Can you recognize correlation between amount of coin images and the mirror sizes (Is it possible to create more/less coin images with bigger/smaller mirrors?)?

3. level (*This is level of application*.) Would you be able to create never-ending amount of the coin images with using only two mirrors? Try to draw a scheme of the mutual position in which it would be possible and try to explain, why you think it would work. Are all the coin images made by reflection of the same reality – the coin? Try to think how the light is travelling between the mirrors and the coin. Would you be able to create only one coin image with using two mirrors? Try to explain your answer. What is the difference between these two positions of the mirrors: while they are touching themselves on their borders and while they are not in any contact? Can you recognise in both positions the rule about coin size – bigger the coin is, less coin images we get? Does amount of coin images depend only on the angle between the mirrors?

OUTDOOR ACTIVITIES




The target...
...is based on motivational theories. It is very important to motivate children for science education from early age with incentives which relates right with IBSE supporting. Children need to have an experience with the real experiment and when it is realized in the field, the motivation grows up. The field laboratory accommodated to primary science education provides also possibility to carry out long-term observations and inquires.

The principles...
… to observe phenomena in its natural surroundings,
… to learn how to take samples of living organisms and how to carry out of them; to learn the techniques,
… to do experiments with living material based on observation,
… to understand complexity of the nature,
… to develop scientific attitude to the nature.

The example...

STIMULATING SITUATIONS: Search for and observe a formicary. Try to tend your attention to the following phenomena:
⇒ Search for a size of the ants´ territory (What is the greatest distance from the formicary where you can still find the ants?).
⇒ Morphological diversity of the ants in the chosen formicary (Take samples of the ants found in different distances from the formicary and search for morphological differences with usage of binocular magnifier). Search for morphological differences between ants from different formicaries.
⇒ Movement of the building material over the formicary (Colour part of the formicary with an ecological spray and observe disappearing of coloured parts, observe the formicary one time per hour trough one day and one time per day trough the week).
⇒ Type of preferred food (Offer the ants different types of food and observe preferences of their choices).
⇒ Behaviour of the ants in a case of intruder's invasion (Try to put a living insect into different parts of the ants' territory and observe the ants´ reaction).
⇒ Way of searching for a food and way of an information transfer about food quality and location between the ants (place a piece of bacon not far away of the formicary and observe the behaviour of the ants which have found the food; observe how they are informing other ants about the food).
⇒ Way of communication in the formicary (Take one ant from the formicary and change its scent, colour the ant and put it back to the formicary, observe).

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