LESSON PLAN

DIDACTIC TECHNOLOGY

SUBJECT : BIOLOGY

GRADE : 6

LESSON : Relationship functions and animal cells analyzed on the microscope

TYPE OF LESSON : Experimental

NUMBER OF STUDENTS : 17

TEACHER : Dăboveanu Lenuța

MATERIALS : microscope, chemical substances, small pieces of meat, fruit, blades

SPECIFIC COMPETENCE :

> Using the biological scientific terms in various contexts of communication refering to microscopic structures

> Investigating the living world with the help of the methods and the specific means for the improvement of life quality, studying the methods of conserving food with the help of chemical substances and the negative effects on people's health.

UNITS OF COMPETENCE :

> Identifying the structures provided in the animal cells visible on the microscope

> Comparing the animal cells among themselves

> Describing the functions of the cell structures visible at the electric microscope

> Establishing the features of the cells to group in tissues, organs, systems of organs, complete organism.

> The role of the bones in the organism

> Comparisson between the chemically-treated food and the natural food.

OPERATIONAL AIMS :

- To identify , on the basis of the previous knowledge, the structural features of the animal cells ;
- To compare, on the pictures, the tissues they are forming ;
- To establish, on the pictures, the function carried out by the animal cell watched on the microscope ;
- To estimate (predict), on the basis of the knowledge acquired during the lessons, the role of the cells in the living world ;
- To understand the negative role of the chemical substances used for conserving the food and what healthy food means .

ACTIVITIES

The functions of the organism are : a) the relationship function

b) the nutrition function

c) the reproduction function

Types of tissues : 1. The cell : definition

2. The tissue : definition

Materials used :

> microscope, blades, slides, dyes

> fragments of tissues : epythelial, connective, nervous, muscular

> fresh dishes, made by the students

EXPERIMENT 1

The microscopic observation of the epithelial, dermal cells from the buccal mucosa : Scrape gently with a spatula a fragment from the side wall of the buccal cavity. Put it on a blade, in a drop of acetic carmin, then cover it with a slide. The dish obtained is passed through a flame to be fixed. Next, analyze it on the microscope.

EXPERIMENT 2

In order to observe the striated muscular tissue, we can use a strip of cow muscle. Dissociate the strip from the muscle with two needles. Fix it with a needle, divide it along the muscle in order to break the connective tissue. Choose the thinnest fibres and pour on them 1-2 drops of

methylene blue 1‰ and wait for 1-2 minutes. Then, cover it with the blade and observe it on the microscope.

EXPERIMENT 3

The flat muscular tissue can be observed through the procurement of a portion from a pig or cow stomach. Put the dish on a blade, colour it with 2-3 drops of alcoholic solution of carmin, let it get dried. Pour it on 1-2 drops of glycine, cover it with a slide and watch it on the microscope.

EXPERIMENT 4

The nervous tissue can be observed through the dissociation of the nervous fibres, (with the help of 2 needles) from a sciatic nerve of a cow.

EXPERIMENT 5

You can collect the cartilaginous tissue from the cartilaginous part of the hen or chicken breastbone and the bone one, from the central part of the chicken breastbone. Specify simmilarities and differences between the 2 types of tissues.

EXPERIMENT 6

Blood smear : The students recognized on the dish the figurative elements of the blood and their role.

CONCLUSIONS :

STRENGHTS : The students cooperated and identified correctly the organs from the thorax cavity, from the skull, from the vertebral mast and from the abdominal and pelvic cavity.

WEAKNESSES : The use of the new laboratory instruments with uncertain motions, not all students being able to master them up, because of lack of experience.

Assessment of acquired knowledge : the cell, the tissues, the organs and systems of organs, the influence of the chemical substances on the basic food. When parts of the hen's body have been treated we can notice that those fragments recently treated have a commercial aspect, while the fragments which were not treated have a deadly pale aspect, unpleasant to look at. The treated apples, having an external wax layer, keep up to 6 months, while the non-treated fruit will become bad in about a week. The students concluded that we must try to eat as healthily as possible (bio food), although it is not always easy in our commercial world.

EVALUATION ACTIVITY

LEARNING THE MAIN TYPES OF TISSUES AND THEIR STRUCTURE ON THE MICROSCOPE

At the end of the experimental lesson, students are asked to answer some questions, in order to reinforce the acquired knowledge and to assess the impact of the activities.

1. What are the four types of tissues from the human body ? Answer : the epithelial tissue, the connective tissue, the nervous tissue and the muscle tissue
2. Where can we meet the epithelial tissue ? Answer : The epithelial tissue is the most spread in the body; it is made up of cells, being part of the organs structure.
3. What material do we use as a microscope sample ? Answer : We use cells detached from the buccal mucosa.
4. Give examples of connective tissues. Answer : the bone tissue, the connective tissue and the blood.
5. How can we obtain a blood smear ? Answer : by collecting, carrying out, fixing , coloring and examining the blood.
6. How many types of bone tissue do we know ? Answer : the haversian bone tissue and the spongy tissue.
7. What is the role of the blood ? Answer : The blood delivers nutrients and oxygen to cells, transports waste from cells and maintains homeostasis.
8. What is blood made up of ? Answer : It is made up of liquid and solids. The liquid part, called plasma, is made of water, salts and protein. The solid part of the blood contains red blood cells, white blood cells and platelets.
9. What is the role of the red bone marrow ? Answer : The function of red bone marrow is to produce blood cells.
10. Why do the meat products at the butcher's look so good ? Answer : Because these products are sprinkled .
11. What experiments have we done and how can we realize that these products are sprinkled through chemical methods ? Answer: They have an external layer similar to wax and keep up to six months.
12. What are the ecological fruits and how can we know that they are healthy to eat ? Answer : These fruits are natural and they will become bad in about a week.