

## CHILDREN, TEACHING AND MODERN SCIENCE

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**Abstract. Children, teaching and modern science.** In this paper, we propose to achieve some appropriate features of some concepts, to analyze some of the possibilities offered by the modern teaching, in particularly those in science and environmental protection. The teachers must constantly find new methods and learning techniques, which have to be interesting and attractive for the students. Science today became a necessity of knowledge, primarily through the vastness of the information provided the development of techniques and approach problems in an interdisciplinary manner. To let the young people's imagination "fly" to find new ideas, new perspectives, is a matter of modern didactics. Only this way we can change our conception and open to something new!

### Introduction

Science is one of the areas very broadly addressed today, in the media, in various informational programs, dedicated to the normal or specialist public.

In both cases, we can see a way to address easy to be understood. This primarily involves the use of a common language, easily accessible to the public without using a complicated language and specialized terms difficult to understand.

Science in our days became a necessity, primarily through the vastness of the information provided, the development of techniques and approach problems in an interdisciplinary manner. Those who will address the science will be able to speak without exaggeration of their belonging to a "modern" teaching.

### 1. Material and methods

The Society and in general the education today is in a "competition", unfortunately most of the times, quantity winning over quality. Most times, of the many offers presented by the media and the school, the first ones will win as they are presented in a more interesting way and arouse the curiosity of those viewing them.

Then, we, the teachers, should find ways and new versions of explaining the

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science so that they can be interesting and attractive to students.

Some aspects that make classes more interesting to students: *Communication depending on student age.*

The modern theory summarizes the process of training in two areas: communication theory and learning theory. Teaching-learning process can be considered as a specific form of communication so it can be expressed in terms of methods offered by communication theory. Successful teaching in this document is provided by the act of communication itself, which has some requirements for the type of oral lesson, for debate, for ethical call, for elaboration (Bocoş et al., 2001).

The models and techniques of communication must however, specifically apply to each student's age category. Nevertheless, to communicate properly, we have to create the space, namely the environment, which makes students to be attentive and responsive to what the teacher says.

Let us think for example to a method which already exists, the "puppet show", in which the main characters are elements of the experiment and the teacher is the one which experiments somewhere from the shadows.

Conducting science classes should take place as early as kindergarten, primary schools, colleges ... etc...

For the 5-7 years age group, experiments must be "dressed" in a story, because this attracts students and captivates their attention. We should also use simple language, easy questions, which attempt focusing the student's attention on the highlights of the lesson or experiment.

For smaller groups of students, those experiments in which they are actors of "volunteers" type are interesting. It was observed in the didactical experiments that the students of 5-7 age share with delight as volunteers, they are more easily getting involved in the type of proposed activity and more emotionally involved.

For groups of 7-11 year old students, the same communication rules described above will be generally used, but in a more developed way. From the teaching experience, it was noted that the use of a most developed language, of new words, raises a higher interest on the proposed experiment (story, volunteerism, enthusiasm, humor, language developed).

The rules will change when we all work with adolescents. Students aged between 11-16 years are more delicate. The language used must be highly advanced. It will all be "dressed" in a story, but everything should be played very complexly to raise the interest of students and stimulate their ability to think. However, enthusiasm should be lower than in other age groups, and volunteering is lower than in the other students groups.

**1.1. Ingenious experiments.** Within the hours of science (biology, physics, chemistry, geography), experiments must be designed as a game. They are of various types involving students or not, depending on their age.

Regardless of their type: intellectually or physically, they must present a great interest, the students should be active, ask questions, in order to highlight the phenomenon that we want to be understood.

The MODERN TEACHING speaks about a professor who is no longer considered a transmitter of law and fact. The student takes certain prerogatives of the teacher and involves in the lesson. However, the teacher also changes: it becomes more flexible, understanding and often accepting the role of receiver.

Nevertheless, the most important thing, I think, is that before starting the actual experiment we must awake the imagination to perceive more easily the experiment and to make some connections.

Here are some examples:

*"Bag with treasure"*, is considered an experiment which awakes the student's imagination. In this game, you can use various elements of metal, plastic, wood (from the kitchen, garage), which at first seem bizarre, not useful. We put these in a bag. The students will be working in-group. The teacher will make groups with no more than four students in each group. They extract an object from the bag and together will have to find its use, coupled with a full description in a short story with several characters. This way, we stimulate the creativity and the communication skills of students (with group and class). Before the game starts, the teacher should make a brief demonstration in front of the students.

Alternatively, the *"Hurricane"*. In this experiment, we need two clear plastic containers, preferably of 2.5 liters. One will be filled with water and it will overlap the other opened container and they will be united with adhesive tape that resists to water. If we transfer the water from one container to another, we'll see that water flows whirlwind. This experiment can be used to explain the hurricane, creating the phenomenon of negative pressure created on the upper tank; air pressure in the container goes down. Or, to teach the lesson about the Danube (Porțile de Fier I, large and small boilers).

Or *"Ours Brains"*. In this experiment, we will ask students to overlap with the palm of his hands the palm of the person sitting next, and then with the thumb and forefinger of opposite hand, touch your index fingers of the overlapping hands. We have a strange tactile feel because of our brain's image you have created a preconceived image of a certain thing and the fact that the moving finger stimulates more touch receptors than the finger that is not moving.

Such experiments will involve the students and will develop their ability to relate the scientific information they find in textbooks and events of everyday life.

**1.2. The role-play in science.** It is an educational game because the role-playing determines an interpersonal relationship, collaboration, reciprocity, depending upon the behavior of each other's game. He may organize the shy students and the less prepared, it can sometimes create even competition.

Application of role-playing is a teaching method that is successful at all age groups and involving the student on all levels. The game will help students memorize different concepts easier and better understand various phenomena, mechanisms and their sequence.

They must be designed to involve as many students, as many characters, their message must be clear and concise.

**1.3. The game in teaching environmental lessons.** The main purpose of environmental education is to give to every individual the opportunity to express a personal attitude, responsible to the environment in which they live. Therefore, education must start from children's natural interest for everything that surrounds us; especially here, we refer to virtual water consumption in daily diet.

What you eat is not always environmentally friendly.

The consumption of different products can indirectly pollute the environment. What we eat makes a difference and where these products come from matters.

The Britain John Anthony Allan first popularized the "Virtual water" concept in 1990. Later, he was awarded in 2008 in Stockholm.

Virtual Water consumption refers in this case, to the amount of water needed to obtain a product in the normal process of productivity. This includes the quantities of water needed for irrigation, transport, etc....

That "*Foot print*" = feet of water from a virtual concept that can be represented and calculated for each person or nation basis.

It is well known in this regard that the European population consumes an average 130 liters of water daily in the household. However, virtual water exceeds this amount and can easily reach 4.000 liters of water / person / day. In the vast majority of cases, the virtual water was important, by buying products from import.

*The first experiment:* We will take a string on which three forms of virtual feet will be fixed with clips. One will represent a water consumption of 500 l, 1.500 l of the second, and the third of over 2.000 liters of water.

To the individuals, the students will be distributed different images of different foods with carrots, apple, orange, chicken, pork, beef, wheat, sugar, bananas, etc...

We will work in groups of 4-5 people. We will have to decide exactly where to put these products on the string. That is less than 500 liters of water or between them, or 2.000 liters of water. We shall not require that they arrange these products properly.

Then we shall explain to them, with the use of other images of the same kind, which will be the correct distribution of these products on that string. On this occasion, they will find virtual water consumption specific to each product, whether or not they require irrigation, if their production does not pollute the environment or... etc.

The purpose of this experiment is to attract interest in products of the type: local and regional country-specific. In this sense, it can be shown that the consumption of apples produced in Romania is more environmentally friendly than the bananas from Africa.

Here are some examples:

-1 apple requires 70 l of virtual water, a banana 200 liters of water, 1 kg of bread 1300 liters of water, 1 kg of coffee 21.000 liters of water, 1 kg of cheese 5000 l of water, 1 liter milk 1.00 l of water, 1 kg rice 3400 l of water ... etc.

*The second experiment:* This experiment aims to offer in the same workshop, to each person, student, a list containing three categories, like in table 1:

Tab. 1 - List used in a modern teaching workshop

Food / product	Quantity	Virtual Water

Each will fill this table, taking as a reference food that we eat at breakfast.

It is known that in Europe, we prefer to consume at breakfast the following: coffee (with or without sugar), milk, cocoa, bread, cheese, eggs, honey, yogurt, jam, fruit, meat ... etc. We will be able to easily find out that almost every one of us beginning with the breakfast, have a virtual water consumption between 800-1400 liters.

Consumption of regional and seasonal products reduces water consumption and reduced environmental pollution. So, reducing consumption of meat and sausage is desirable both for the required virtual water consumption and to your health.

*The third experiment:* Refers to watching a film entitled "We feed the Word!

It is the presentation of reality in Spain / Almeria, especially about growing tomatoes. It is noted that the area of cultivation is very high and it increases water consumption, despite the techniques shown and used in the film. This film also highlights the local population situation that, despite the so-called "wealthy circumstances" in Almeria, is not very good. Because those who get rich are not the ordinary people, but those who sell these products.

### Conclusions

In the context of our days, such an approach to science is necessary. This paper aims to present a few examples, which aims student's expectations. These solve consecutively the need to accumulate scientific information in an enjoyable, relaxing and interactive study. As the examples and techniques described above show that we can change a monotone class into an interactive and interesting one

involving the student.

*Letting young imagination "fly" to find new ideas, new perspectives, is a function of modern didactics. Only this way, we can change our conceptions, open ourselves towards something new!*

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