

## **“Specifics in Defining the Objectives of the Lessons of Natural Sciences Subject (Primary Education- AMU)”**

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### **Abstract**

This article gives suggestions on how to analyze the given scientific material in the context of Natural Sciences of 9-year educational system with the intention to define necessary objectives, in this way pupils will be able to absorb consistently the teaching material.

Thus, on the basis of instructive experiences and didactic approachings of the examples of this branch, all students of Full-Time and Part-Time systems, especially the latter, this article argues that there can be faced incorrect determinations and ill-progressed processes. On the basis of some suggestive keys on this article, there is given the method to be followed in order to achieve the definition of proper near, mid-termed and long-termed objectives. It is also shown the role of strategic long-termed objective which is of high importance to the laws acting on phenomena, which in turn are objects of study of this discipline.

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### **Introduction:**

Natural Sciences that is studied in lower primary school of 9-year educational system contains teaching subjects which treat topics of different natural-physic, chemical or biological phenomena. It also treats topics of flora and fauna, astronomic knowledge etc. which are of adequate level for this age-group pupils. This subject is treated by the teacher of 9-year system. However, to all the issues that are treated in this discipline, despite their field, it should be said that pupils face natural phenomena which in turn obey to specific natural nomocracy groups. This makes the conception and determination of teaching objectives much necessary, with the intention to comprehend the essence of unique nomocracies of nature from the student's part. These nomocracies either regulate and condition the whole natural activity in general or determine the stream of phenomena chosen in particular. When determining the objectives in this discipline, it should be considered not only the level of objectives type (basic, medium, high level) according to their difficulty of achievement, but also their grouping according to the necessary duration of their accomplishment. This is planned with the only intention to keep the pupils' curiosity active about what they are eager to learn or even about what they would like to become in their future.

The topic being analyzed has not to do with how the current teaching lesson is being applied in schools, because such an action in terms of alert text would be futile, but it has to do with the characterization of a topic (phenomena) to be treated and how this is to be done. Providing the key to the right solution of this problem in this case, it becomes much efficient because the teacher needs to do right, completely and efficiently the process of transmitting and assimilating the cognition.

Only in this way is it thought that the curiosity to assimilate the knowledge is revived and the measures towards an engineer, astronaut, physician or biologist-to-be are taken.

### The material and methods:

The realization of this project was made thanks to our teaching and observing experience with the teachers of 9-year educational system. Through natural observation, organization of teaching model hours and through organization of concrete discussions with experienced teachers in this field, a helpful and explaining methodology was made possible and it helped to achieve what a teacher was required to in order to assimilate the knowledge of this discipline.

In short, our study method is that of theoretic analysis (*qualitative-phenomenologic*) [10, 14, 15, 16, 17, 19] of the gathered facts from the observation and discussion achievement related to this problem and it consisted in:

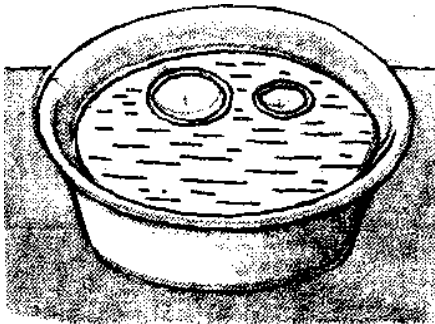
1. Observation of some teaching diaries related to this theme prepared by different, even 20-year work experienced, teachers.
2. Discussions with different groups of teachers, especially with those in profession that attend high education of their profile (related to this problem).
3. Realization of model teaching lessons with students of this field ( full-time system, final grade).
4. Realization of analysis related to the problem of specifics in determining the teaching objectives of this discipline.[3, 4, 6, 10, 11, 18]

### Process compilation:

The process of determining teaching lessons was accomplished and analyzed in teaching topic : **“THE INTERACTION OF SOLIDS WITH LIQUID” Teaching subject NATURAL SCIENCES 3**, the authors being : prof.dr. Ethem Ruka, Dr.Fatmira Zeneli, Zana Klosi, Tonin Pavaci, Agron Nishku, Marita Hamza, Publishment of Publishing House of the Educational Book - Tirana 1999.

The corresponding content and illustration of this topic are as follows:

### 22. THE INTERACTION OF SOLIDS WITH LIQUID



**1. Can you predict** which of the caps will sink first?

In each of the caps put the same number of nails. There comes

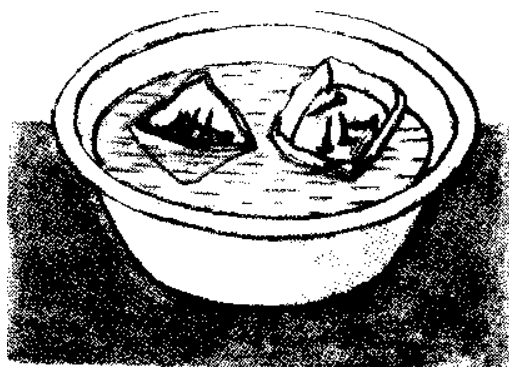
a moment when one of the caps sinks. **Try your prediction.**

**2.** From two caps of milk bottles or from the same aluminum sheet prepare a kind of stick and another like sphere. Throw them in a bucket

with water.

**What do you notice?**

Pic. 1



Pic. 2

3. From two same thin aluminum sheets (or two milk bottle caps) prepare two small boats, pic. 2. Put them in the bucket with water. In each of the boats put small nails one by one. What do you notice? Which of the boats will sink first? Why did the boat with the shape of ----- sink first?

### STUDY AND ANSWER

Take a bottle cap. **If we let it free it** will fall on the floor. If we let it fall on a bucket with water **we notice** that it floats. Thus the water \_\_\_\_\_ makes it sink. If we try to sink the cap forcefully we notice that \_\_\_\_\_. **Thus the cap floats on the water.**



### EXERCISES

**1. Which** of the solids mentioned float and which sink?

Stone, cap, a piece of glass, nail, wood, water glass (upstanding, downstanding, horizontally), olive grain, a piece of brick, an electric bulb, rubber, pencil (plastic and metallic).

**2.** We know that nail sinks. **What can we do** to make it float?

**3.** Prepare two small boats of the same size. The first boat should be made of pine jacket whereas the other should be made of poliestiren. Put them on the water. **Which of them** holds the heaviest load before sinking?

### Results and discussions:

In all cases of our analysis, including also the classes and model diaries of improver teachers and students, the determination of the objectives of this teaching topic (concentrated and grouped) consisted as follows [1, 7, 8]:

### A - Objectives :

Near objectives:

1. Pupils should achieve the excellence of this topic “The interaction of solids with liquid”.

2. Pupils should understand that some solids sink and some others float while interacting with water.
3. Pupils should understand that interaction of solids with water depends on contact surface and the shape of solid.
4. Pupils should be capable of answering the questions at the end of the lesson.
5. Pupils should be able to read fluently the text and understand the difficult words.
6. To teach the pupils how to be cautious from the contact with liquids and their attitude related to well management of water.

Mid-termed objectives:

1. Pupils have to think and be able to bring other examples of the interaction of solids with liquid.
2. Pupils should practice to conduct some experiments related to the interaction solid-liquid.
3. Pupils should understand the necessity of liquids in good of our everyday life.

Long-termed objectives:

1. Pupils should gain stable knowledge on this topic in order to use it in everyday practice.
2. Pupils should gain stable knowledge on this topic with the intention of relating it with other later similar topics.

**B** – During the explication of the lesson, in all cases such as lore review, the teachers used to assess the pupil just on the description of experiments (context) correctly and fluently asking them also any example, without considering much if they had grasped the basic concepts having been treated both theoretically and through any *course* or experiment, a fact that speaks a lot about the cursory work of the teacher.

**C** – Rarely was made the question: “*What does the interaction of solids with liquid depend on?*” and in that moment was required to be given this answer “*such interaction depends on the size and shape of the solids.*” Thus, the case of dependance on *solid material* was not considered at all (explained in the part- Exercices).

**D** – In our question (knowing everything given on the text) that “*What does the interaction of solids with liquid depend on?*”...which the pupil is not asked to describe the content of the text but to highlight the achieved conclusions, he did not give the complete answer (because the role in this proces of the *solid material* was not defined by the teacher, as this fact is not described as theory but as exercise (part- Exercices) as it was to be defined by the teacher.

**Conclusions and results:**

1. From what was explained previously we can say that the teachers have defined the objectives of teaching classes without previously considering the teaching material and without analyzing logically

why are there given examples of experiments, both in the part of content explication and in that of free tasks which can be compiled as part of free tasks in class or homework.

2. As it can be seen in objectives (many others have not been represented as sometimes they were beyond objectives) their variety raises confusion and uncertainty whether they will be accomplished by pupils of this age.
3. None of the above objectives ensures that the pupil will understand correctly the terms : “interaction” ... “sinking” ... “floating” ... This is because of their concentrated concept in the part (**study and answer**).
4. There is not seen the relation of lore with everyday life been argued. The grasped knowledge by pupils is not explained where to be used in life practices.

*The teacher should make pupils understand that these concepts are practised when we swim at the sea. We move our arms and feet to swim, or lay on back and stretch both arms and feet (gain a larger surface of contact with water), otherwise (if we do not move) we will sink. Using this knowledge on water transportation is another innovation in this view. etc.*

5. In order to get information whether pupils have assimilated the lesson or not, then just ask them : “ Can you say *what does the interaction of solids with liquid depend on?*”... They can just answer: “*It depends on contact surface, shape of solid and the material it is made of.*” If pupils then are asked to illustrate experimentally one of these cases and they do it, then this would be sufficient to realize that our objective had been accomplished.
6. We can also ask ... “*What do you understand by interaction of solid with liquid?*”... “*..when the solid floats*” and “*when it sinks*”... and we get correct answer, then we have completely achieved the teaching objective, but what curiosity is left on pupils about the future? Strategic objective comes in handy. (**look further**)
7. A pupil of this age gets the normal capacity load and necessary as well if everything that is submitted in the text would be concentrated so pupils would have it easier to memorize. That would be these two sentences:
  - a- *The interaction of solids with liquid depends on contact surface, shape and material of solids.*
  - b- *The liquid and solid contacting with it press on each other (interact). When the pressure of solid on liquid is greater than that of liquid on solid, then the solid sinks; otherwise the solid floats. The pupils*

should also be able to illustrate experimentally the meanings of these sentences with concrete examples as well.

### Recommendations:

1. Before reaching the definition of teaching objectives, the teacher should analyze in detail the content of the text, in our case the target experiments, target tasks to be completed during the process of leaded course and free course as well. He should also analyze what is planned as homework (because in the latter is made the difference between the role of the subject in the interaction solid-liquid). [2,4,10,12]
2. The teacher, after having studied the material of the text, should define the scientific concepts that are represented in context such as: *interaction, sink, float*.
3. The teacher should understand that in the first experiment (pic.1) what makes the difference between sink and float is exactly the **contact surface**, as both caps have the same shape (they are round) and are made of the same material (plastic). In the second experiment (pic.2), the difference is made by **the shape** of the solid as both boats are of the same size (equal sheets) and the same material (aluminum sheet). In the third case (*The part- Exercises*), it is the teacher who should make pupils understand that when the solids are of the same size and shape, what makes the difference is **the material** (wood, iron, plastic, etc) as the text did not explain these objects which should be taken of the same size, shape and volume.
4. From the given examples, it should be defined that floating and sinking of the solids depends on the contact surface of the solid with liquid, on the shape of the solid (*which has to do with size/unit of surface*) and on material (*which has also to do with the report density-size/unit of surface*).
5. The teacher should explain that **interaction** between solid and liquid means: while a solid put on a bucket with water presses on liquid, then the latter does the same thing on solid (*two forces with same direction but different poles*).
6. It should be explained that when the pressure that liquid has is greater or when these pressures equalize, then the solid *floats* (stays on the surface). When the pressure of solid on liquid is greater, then the solid *sinks*.
7. To realize all what is necessary and that is explained previously, we recommend that the teaching objectives, concentrated in as few sentences as possible and functioning for the specifics of this subject, can be divided as follows [3,5,9,13].
8. Objectives:  
A – Specific Objectives (They should be in direct relation with the content of the topic):

1. The pupils should understand that the interaction of solids with liquid depends on *contact surface, shape* of solid and the *material* they are made of and that “...when a solid comes in contact with solid it floats or sinks..”

2. The pupils should be active in finding examples of these knowledges in the everyday practice (the importance of liquid and its interaction in service of human-*swimming, water transport, etc.*)

3. To be elaborated the thinking and speaking process of pupils in scientific language.

B – Strategic Objective (It has to do with the natural nomocracy which acts on the phenomena being treated in this lesson. This objective might be similar with some topics which treat information of the same nomocracy.) consists in:

1. Solids in nature, despite their state (liquid, solid, gas), interact among each other based on specific nomocracies.

Such a thing will be concretized in higher classes together with interaction types (in contact, in distance, dissolution and the opposite), with types and interaction nomocracies (in liquid, in gases, etc.). In this material, we only do light the strikes of curiosity about new knowledge in these fields, that the child will absorb, understand and explain in the future when he treats the subjects of Physics, Chemistry, Biology, Astronomy, etc.- as a future sailor, engineer, constructor etc.

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- “Përcaktimi i objektivave dhe planifikimi i mësimi.”  
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