2. Teaching Guide

At the beginning of first stage, a fizzy tablet is dropped into a glass of water and the pupils are asked to describe their observations. This everyday procedure is usually not registered consciously or questioned by the puplis; this specific situation makes the children aware of a new perspective. Although dissolving a fizzy tablet in water is something almost all children have seen before, they formulate their observations with a certain degree of astonisment beeing also interested by this common fact. They ask the question, among others, „What actually produce effervescence?". The children voice assumptions and begin suggesting solutions: they propose reading what it says on the packaging. Unhappy, this first step make rather unclear the situation due to the fact that the label on the package contain only the ingredients / components and not their specific function. So the children guess which substance might cause the gas bubbles.

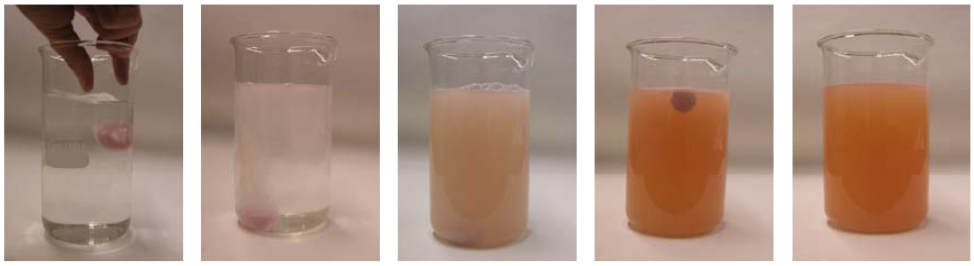

Fig. 1 *Dissolution stages of an effervescent tablet*

In the next step the children ask if they could add the ingredients to the water separately and observe which of the substances fizzes. But this does not lead to the desired result either, since the effervescence is only produced when mixing sodium hydrogen carbonate and citric acid. In water. Therefore, the children have to test combinations of ingredients to get the „fizzy bubbles" and answer the question.

Having answered the question in the course of the experiment, a further question follows: How much gas is produced from one tablet? The analysis of the problem gives the children further possibilities to develop their own ideas and suggestions for a solution.

SEVENTH FRAMEWORK PROGRAMME
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Studying the gas volume released, the children realise that tablets from different manufacturers produce different amounts of gas. This finding allows a group disscution about the experimental setup, possible sources of error and once again about the composition of fizzy tablets. In this stage, then, the children independently plan experiments and test their suggestions for a solution.

From problematics point of view is it not of importance that the children draw up a list of materials required or that they describe the experimental procedure in great detail. What is of importance is that they are encouraged to think about how they would – in principle – plan experiments; that is to say, how they would reflect on and systematically prepare and try out different options.

By starting with a question based on the observed phenomenon, the children go on to formulate assumptions and then verify them experimentally. Afterwards they reflect on and present the results. By doing so, the children are able to learn and practice the methods of thinking and working in science based on everyday problems that can turn out to be quite complex.

References

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