Test concerning the progress of learning Natural Sciences at the end of the primary cycle in Romania.

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Science Education in School focused on IBSE, 2-3 October 2009

The goals of the test

This test tries to:

- measure the understanding of Sciences (concepts: mass, volume and density)
- verify the usefulness of the "hands on" methodology.

Personal achievements in the spirit of "Hands on Science“ prior the test

Between 2007-2009, at the Ion Barbu Theoretical High school –Bucharest (School A for the test), we have organized events that encouraged the study of Sciences in the spirit of *Hands on* Science:

Celebrating *Earth Day:*

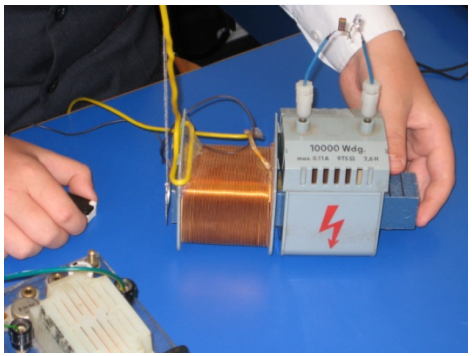
2007: **Day of the Earth Symposium**,

2008: **The International Science Fair**,

2009: **The international Science Fair**,

2009: The project **The magic of Physics**, addressed to hypoacoustic children.

The international Science Fair, 2009



The international Science Fair, 2009

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The international Science Fair, 2009

The test

1. The water level in a graduated cylinder is 150 ml. After five identical balls have been introduced, the level is 200 ml. What is the volume of a ball?
2. A bottle full of water is put in a freezer.
   a) What do you think happens when the water freezes?
   b) Explain.
3. A student has two balls of equal volumes, one of lead (Pb) and the other of wood.
   a) What can you say about the masses of the two balls?
   b) Explain.
4. a) Describe an experiment you have done.
   b) Explain the phenomena you noticed.

Test details

- The test was applied to a group of eight classes from the two schools (four classes from each school), amounting to a total of 138 students.

- The test subjects were chosen from two schools: students from "school A" have participated, while students from "school B" have not participated in extracurricular "hands on" activities.

Test results

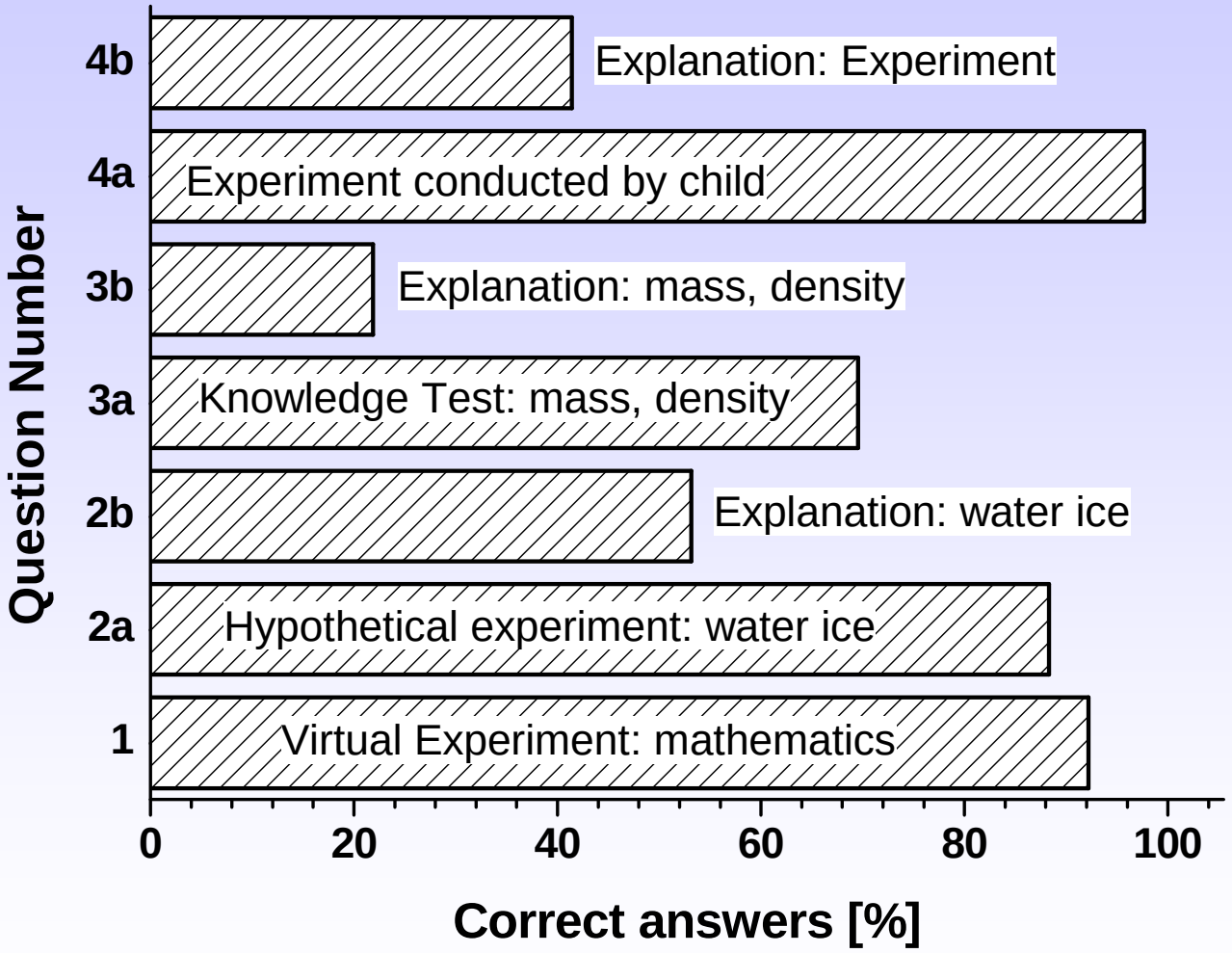
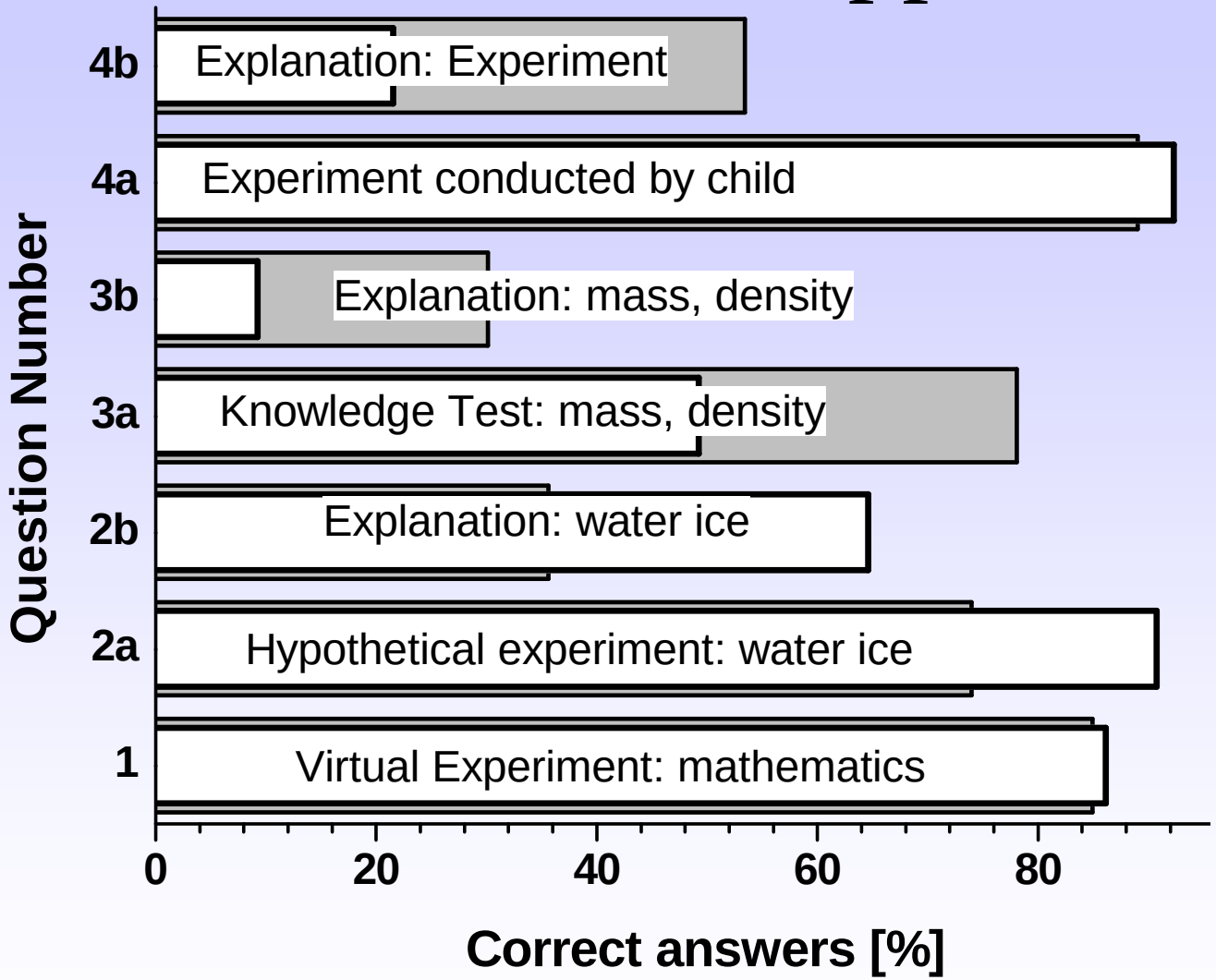


Diagram of correct responses for the entire population subject to the test: 138 students.

On the Hands on approach



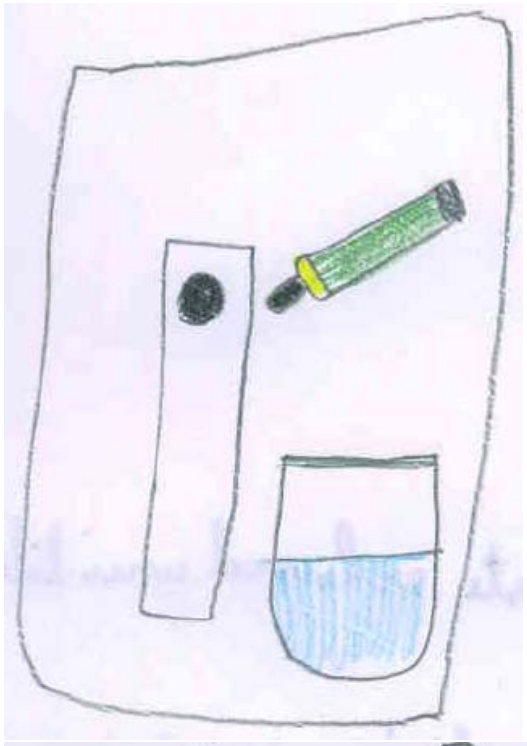
Comparison between the results of the two schools: Light Gray – School A; White – School B.

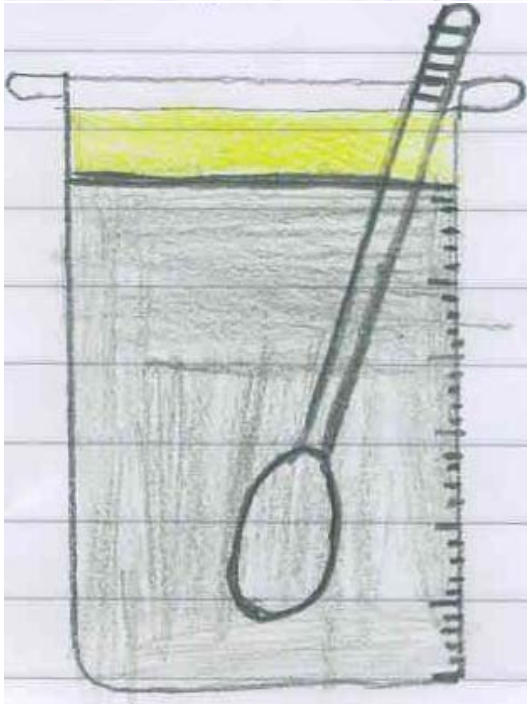
Conclusions

Teaching science at primary level is hardly or not at all based on experimenting. Concepts are only weakly linked to experimental facts. Currently teaching science at grade 3rd an 4th is largely descriptive and poor explanatory. The student knows what happens but does not understand the causes of phenomena.

In our opinion the use of combined strategies, "Hands on" and "Inquiry Based" can produce a significant improvement of the quality of the act of teaching.

Child answers





Pentru acest experiment am avut nevoie de:

- Apă,
- Un marcăr sau o carioră de culoare neagră,
- Un pahar,
- Și o bucată de sugatină.

Thank you