

Early Science Education in Hungary, Two Examples from Szeged

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1 Primary objectives

The main goal of the poster is to present two examples of early science learning by being engaged in scientific experiments.

Key words: early years, low-cost science, inquiry-based learning, testing hypothesis, student experiments, outdoor science.

2 Description of projects

2.1. "Let's Play Science!" courses

These courses are for 6-10 years old children. The thematic experiments support the establishment of interest in science in the early years and help the development of thinking skills. The special learning environment frequently provides opportunity for inquiry-based learning.

Simple objects, like spoons, straws, rubber bands, basic electric circuit, pins, nail polish and other materials from the household are turned into science experiments during the courses. Well-known and self-developed experiments are also used, most of which haven't yet gained awareness internationally. The experiments help developing and improving children's scientific skills and motivation, since they suit their abilities and interests.

Despite the fact that the age group is 6-10 years in our classes, teachers from kindergarten to high school can implement our experiments. The complexity of the explanations can be altered to fit the level of education, and even calculations can be added to practice. The simple materials and the fact that the experiments can be financed with reasonable expenses make it easy to prepare the setups even in schools that are lack of laboratory.

The activities not just complement, but also go beyond the curriculum of kindergarten and primary school. International studies, for example TIMSS and PISA studies have shown that a great problem of teaching science is low motivation and weak attitude of children. The courses set an example for a possible, fun and adventurous way of teaching science in the early years that could address these problems.

These experiments not only promote students interest in science and have connection to everyday life, but are also beneficial in the foundation of learning the following topics: balance and torque, evaporation, isolation of salt and sugar from water (straw-balance) vibrations and waves in acoustics (straw-horn), geometrical optics phenomena (mirrors and lenses), interference of visible light (nail polish rainbow), electricity (black box) and connection of magnetism and electricity (Oersted-experiment with pin), etc.

2.2. Attic of Secrets courses

The so called Attic of Secrets (Titkok Padlása) is a science programme that has been designed specifically for 6 to 10 year-olds. These science classes are held on one Saturday morning every month. Using the human and material resources of the Szeged Regional Science Student Laboratory we try to make kids understand and love science.

At one time there can be 24 students in the laboratory, they are divided into 3 groups of 8. Each group has got different task, with a completely new and exciting scientific topic, being taught by three different teachers. Each session lasts 45 minutes and all activities are interactive, catering for a lot of different learning styles and keeping the children's attention. After the first short break the groups go to the next teacher in a rotating stage. After having the second session children go to the third teacher's class. At the end of the mornings all children took part in three different classes.

The topics of the sessions are chosen in a way that they fit to children's everyday life and experiences. An important aspect in selecting the experiments is that they can be performed by children as well. In the experiments our aim is to use well-known materials and the simplest household equipment and materials. We try not to waste large amount of materials used for the experiments and avoid the use of unnecessarily large quantities. In many cases materials are recycled. While we are preparing for the sessions we put emphasis on the development of thinking operations, the development of the research skills of the children as well as the complex development of their multiple competencies. We want to study cross-curricular problems. When we are making our lesson plans we try to choose such experiments where children can try and practice the use of measuring instruments.

3 Conclusion

The experiments have been used in practice for more than 10 years. The improvement of scientific and critical thinking is supported by all activities.

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