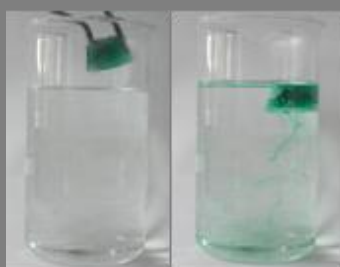




PROFILES IBSE Teaching/Learning Materials for Teachers

compiled by the PROFILES Working Group of the Freie Universität Berlin – Germany



KieWi & Co. – Ways into the Microscopic World: “What happens to the ice cubes in my soft drink?”

A Module for Science Instruction –
especially Chemistry – for Grades 5 to 7

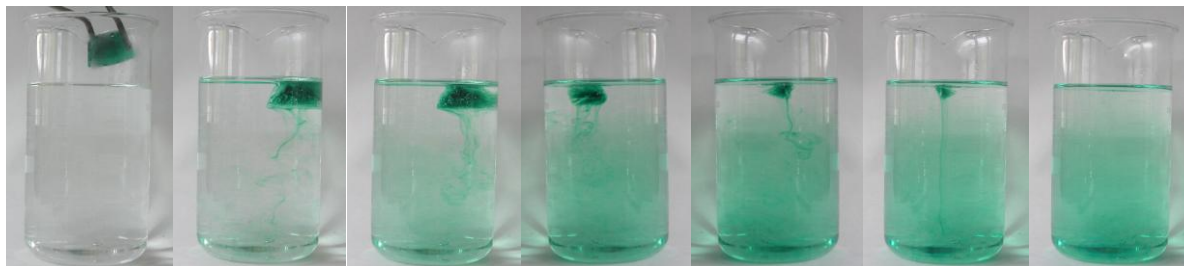
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Module Content

In this module “Ways into the Microscopic World” the children are confronted with an everyday phenomenon (melting an ice cube in a glass of apple juice) and are asked to observe and describe exactly what they see. Only after watching the phenomenon the question arises what actually happens with the melt water. The children formulate different assumptions: The melt water sinks, collects at the surface or mixes equally with the juice. Having voiced these opinions the children start independently planning experiments to test their assumptions. Some children suggest using an ice cube of coloured water to be able to follow the melting process in more detail. After carrying out their experiments the children’s observations are collected and plausible explanations are discussed. It seems certain that the cold water sinks to the bottom of the glass. However, the result is doubted by some children. The cause for the melt water sinking to the bottom of the glass could be the higher density of the dye used.

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The children question their own experimental findings and are asked to plan and carry out a new experiment to test their hypothesis: If cold water sinks to the bottom in warm water, then warm water should rise to the top in cold water. Yet if the dye was the reason for the sinking of the cold water then the coloured warm water should remain at the bottom of the glass.



Picture 1 – Melting a coloured ice-block

This example shows how children can and want to learn scientific ways of thinking with these supposedly “unspectacular everyday procedures”. It also shows how questioning and doubting of their own findings can work towards encouraging a scientific mindset in the children. (cf. Höttecke 2001). Scientific work in a course requires a high degree of self-determination, autonomy and competence experience since the children have to be able to follow and discuss their own ideas and do not receive prefabricated experimental procedures, which they simply have to follow step by step.

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