

Tasks to analyze a classroom setting for experimentation - Difficulties and Approach of students

Below you will find a teaching scenario with an assignment for students of a 6th grade class (comprehensive school) on the experiment "Dissolving time of sugar". *Please read it thoroughly and answer the questions listed on page 2.*

Lesson Phase	Teaching Content with Student Actions (S) / Teacher Actions (T)
WELCOME & INTRODUCTION	T: Holds up sugar cube and a glass with water. "What could you do with these two substances?" S: Shout ideas into it.
PHENOMEN	T: Does not comment on the ideas, but leads on to the phenomenon film "Tea Talk".
QUESTION	T: Puts research question on the whiteboard: "And that's what we want to explore today. And it's about the question: How does the time needed to solve sugar depend on different influencing factors? "

PHASE TRANSITION TO THE EXPERIMENTATION PHASE:

T: „You will use glasses like this for the experiment. This is a snap-on lid jar. They are in the material boxes. When you want to shake them, close the lid carefully and swing them like this (T will demonstrate). Does anyone else have a question?"

The teacher sets a time limit for the experimentation phase and allows the students to turn over the worksheets that are covered on the tables. The material boxes are already on the tables.

EXPERIMENTATION PHASE	<p>S: Get into their groups. Each group has a material box with the following equipment:</p> <p><i>Measuring cylinder, 4 snap-lid jars with lids, 10 sugar cubes, mortar with pestle, spatula, funnel, stopwatch, beakers, water at different temperatures.</i></p> <p><u>Note in the student worksheet:</u> For the investigation you have the following materials at your disposal from which you can choose which ones you want to use. Not all materials need to be used;</p> <p><u>Assignment in the student worksheet:</u> Agree in the group on an influencing factor and investigate your assumption experimentally!</p>
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What difficulties do you expect the students to have with regard to the content knowledge and the implementation of the experiment for the given assignment?

List four key decisions or actions that students need to make when completing the assignment.