Enhancing Primary Science: An Exploration of Teachers' Own ideas of Solutions to Challenges in Inquiry- and Context-based teaching

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Studies of inquiry- and context-based science education (IC-BaSE) have shown that teachers find these approaches problematic. From the perspective of primary teachers´ and their use of inquiry in teaching, earlier studies have shown some important factors to be considered. Some problems found are that primary teachers lack subject matter knowledge in science and usually follow the book chapter by chapter, and when using inquiry it is usually done with the help of kits. Teachers lack strategies to cope with unexpected results and therefore follow the cookbook style to feel safe. They find the amount of time for inquiry during lessons too short, and they are afraid of situations without control with messiness and chaos in the classroom when students are doing inquiry. To our knowledge, solutions to practical challenges found especially among primary school teachers have not been investigated to any great extent. Therefore, this study investigates how primary teachers reflect on the practical challenges of inquiry- and context-based education and how the challenges may be solved. In this study, twelve primary school teachers' reflections on challenges related to IC-BaSE are explored. The aim of the study was to investigate which challenges primary teachers experience when working with IC-BaSE and how these may be solved. The primary teachers participating in the study had at least one year of education in science and the issue of lack of subject matter knowledge was not on the agenda. Group discussions and individual portfolios were used for data collection. Content analysis showed that the challenges teachers experienced were mainly practical relating to: *how to find contexts, lack of time, handling big classes, students working at different paces, handling materials*, and *the teachers´ need of control*. The teachers also presented their own ideas of solutions to the challenges. The ideas included more cooperation with the students in finding appropriate contexts. The teachers discussed how they could use materials from an already existing teaching aid to save time. A station system of inquiries in which not all students needed to do everything was a solution suggested of how to handle big classes and students working at different paces. From a continuous professional development programme the teachers had picked up a strategy of how to use inquiry without the class ending up in chaos. The strategy was to gather the students with short intervals and releasing them back to the inquiries after a few minutes of checking the status of their inquiries. Emphasizing practical aspects of the use of IC-

BaSE is necessary in order to support teachers, otherwise practical challenges might become overwhelming and IC-BaSE used to a lesser extent. The way the primary teachers in this study dealt with the practical obstacles, by focusing on solutions, is an interesting and potentially valuable support to other primary teachers who are adopting the IC-BaSE model. This could be of interest to discuss in teacher education programmes, both for pre-service and in-service primary school teachers.