Programming as a tool for across-subjects learning in primary school

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* Learning
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## Sample

One primary school (sixth grade) in Sweden with a total of 155 participating pupils,

## Implications For Educators About

* School innovation
* Professional development
* Other

# Abstract

Problem and goal. Computational thinking has been introduced in many countries around the world and teachers are working intensely to incorporate programming activities in the classroom. However, teachers are faced with several challenges due to the fact that there is still little research conducted focusing on programming education for younger children, that programming didactics is a rather new phenomenon for the K-9 educational system, and that K-9 teachers have little training with regards to programming. In Sweden for instance, programming has been introduced in several subjects and not as a subject in its own, which create a pressure on teachers to utilize programming as an instrument to teach and enhance learning of different subjects such as mathematics. Methodology. In this paper, we report on a larger lesson study conducted in a primary school (sixth grade) in Sweden with a total of 155 participating pupils. The aim of the lesson was to study whether the visual programming languages, Scratch , in particular, can be used to teach computational thinking, mathematics and social science in an interdisciplinary way. Results. Thus, the paper more specifically presents findings related to: 1) reflections of the use of lesson study methodology to develop programming education; 2) how programming can be utilized as an instrument to teach mathematics as well as social sciences in an interdisciplinary way; and 3) the didactical strategies employed by the teachers. Conclusion. The evidence from this study suggests that the interdisciplinary character of the lesson which incorporates learning goals of mathematics, social science and programming was highly beneficial. The pupils gained a better understanding of learning material by drawing, digitalizing and animating their ideas in Scratch .

# Outcome

"[T]he interdisciplinary character of the lesson was beneficial in several ways.... [W]e could clearly see that the pupils were more engaged than usual and based on our observations, it is re- lated to the use of programming as a tool and context for learning mathematics and social science." (Authors, 185-186)