

# Creative mathematical tasks contribute to deeper learning in mathematics

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Working with creative mathematical tasks is important for pupils both to reflect on mathematics as well as for their subsequent test results. Being faced with creative tasks during exercise has evident effects on all pupils, both on weak and high performers. This according to studies at Umeå University in Sweden.

"The results of my dissertation show the importance for pupils to work with creative reasoning and not always get methods and rules presented in advance. This is something both publishers and teachers could take into account more often when designing mathematical tasks," says Mathias Norqvist, doctoral student at the Department of Mathematics and Mathematical Statistics at Umeå University.

The studies show that pupils at upper secondary school who work with exercises designed to encourage creative mathematical reasoning more easily remember what they have learnt and, as a result, perform better.

"Contrary to common belief, it seems to be the low performing pupils who benefit most from practicing with [creative tasks](#), in comparison to more imitative tasks where focus lies on how to use the given solutions," says Mathias Norqvist.

There is a great risk that pupils who are presented one method, will use it without further reflection. Although, there are of course certain methods in mathematics that should be automated to relieve the pressure on the working memory, but it should not come at a cost to the understanding

of the underlying mathematics. Since well-designed creative exercises can focus on central mathematical properties, they are important for all pupils since they force pupils to reflect on the [mathematics](#) and to base their reasoning on what they already know.

A total of about 300 upper secondary school [pupils](#) participated in the studies that formed the basis of the dissertation.

**More information:** The dissertation is online:  
[urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-124677](https://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-124677)

Provided by Umea University

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