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Does it help to use mathematically superfluous brackets when teaching the rules for the order of operations?

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Summary: The hypothesis that mathematically superfluous brackets can be useful when teaching the rules for the order of operations is challenged. The idea of the hypothesis is that with brackets it is possible to emphasize the order priority of one operation over another. An experiment was conducted where expressions with mixed operations were studied, focusing specifically on expressions of the type $a \pm (b \times c)$ with brackets emphasizing the multiplication compared to expressions of the type $a \pm b \times c$ without such brackets. Data were collected from pen and paper tests, before and after brief (about 7 min) instructions, of 169 Swedish students in year 6 and 7 (aged 12 to 13). The data do not seem to support the use of brackets to detach the middle number (b) from the first operation (\pm) in $a \pm b \times c$ type of expressions.

Classification: H23 H33

Keywords: algebra; brackets; order of operations; algebraic expressions

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