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Solution strategies and adaptivity in multidigit division in a choice/no-choice experiment: student and instructional factors.

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Summary: Adaptive expertise in choosing when to apply which solution strategy is a central element of current day mathematics, but may not be attainable for all students in all mathematics domains. In the domain of multidigit division, the adaptivity of choices between mental and written strategies appears to be problematic. These solution strategies were investigated with a sample of 162 sixth graders in a choice/no-choice experiment. Children chose freely when to apply which strategy in the choice condition, but not in the no-choice conditions for mental and written calculation, so strategy performance could be assessed unbiasedly. Mental strategies were found to be less accurate but faster than written ones, and lower ability students made counter-adaptive choices between the two strategies. No teacher effects on strategy use were found. Implications for research on individual differences in adaptivity and the feasibility of adaptive expertise for lower ability students are discussed.

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