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**The development of students' algebraic proficiency.**

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Summary: Students' algebraic proficiency is debated worldwide. To investigate the development of algebraic proficiency in Dutch secondary education, we set up a study, in which 1020 students in grades 8–12 took four algebra tests over a period of one year. Rasch analysis of the results shows that the students do make progress throughout the assessment, but that this progress is small. A qualitative analysis of test items that invite structure sense reveals that students' lack of structure sense may explain the results: the majority of the students were not able to deal flexibly with the mathematical structure of expressions and equations. More attention to structure sense in algebra education is recommended.

*Classification:* H20 H30 D60 D70 C40

*Keywords:* lower secondary; upper secondary; elementary algebra; algebraic skills; research; procedural fluency; conceptual understanding; symbol sense; structure sense; tests; Rasch scale; fraction in equation; simplification; factorization; Arcavi's equation; Wenger's equation; recognizing linear forms  
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