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**Solving addition tasks through the use of different modes of representations in primary school.**

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Summary: This study examines the effect of different modes of representation on the solution of addition tasks in the two first grades of primary school. First and second graders were given addition tasks, either in symbolic form or including also a representation; a picture or a number line. The results revealed the ambiguous role of representation in the solution of the tasks, as they do not always enhance the students' solutions. The placement of the unknown element and the type of the transformation of the addition task were additional factors that appeared to affect the solution of the tasks. The results revealed also the differentiated use of representations by the two groups of students, as for the first graders the use of representation seems to be supportive, whereas for the second graders solving addition tasks seems to be independent from the use of representations.

*Classification:* F32

*Keywords:* primary education; first arithmetical instruction; arithmetic; research; addition; problem solving; modes of representation; problem posing; graphical representations; pictures; number line; Rasch model; students' performance