

FRUIT SALAD ALGEBRA – A COMPARISON OF EXPERTS’ AND MATHEMATICS TEACHERS’ NOTICING

Macarena Larrain¹, Josephine Paul², Anke Lindmeier², Feng-Jui Hsieh³, Ting-Ying Wang³, and Anika Dreher¹

¹Freiburg University of Education, ²University of Jena, ³National Taiwan Normal U.

An adequate use of a representation has the potential of facilitating students’ mathematical understanding, whereas its inappropriate use may lead to misconceptions. A well-known misconception in algebra learning is the *letter as object* misconception (Küchemann, 1981), where letters are conceptualized as objects rather than as unknowns or variables. Because often images of apples and bananas are used to represent variables a and b , it has also been called *fruit salad algebra*. Besides being aware of this misconception, teachers and experts in mathematics education need to use this knowledge to notice and make sense of classroom situations. One approach for assessing teachers’ noticing is using representations of practice that include some breach of a norm. The identification and interpretation of such breaches are considered as an indication of teachers’ noticing expertise. In this communication we examine and compare experts’ and teachers’ noticing regarding a classroom situation in which fruit salad algebra is used (breach of a norm). This study is part of a project that explores perspectives on instructional quality and teacher noticing (Dreher et al., 2021).

Data consisted of the responses of 12 German experts (professors in mathematics education) and 113 German secondary mathematics teachers to a vignette showing fruit salad algebra being used. The picture cards used in the vignette to illustrate the combination of like terms do not properly represent the nature of variables. Participants were asked to answer the following open-ended question ‘Please evaluate the teacher’s use of representations in this situation and give reasons for your answer’. The results of a qualitative analysis show that the majority of experts recognized the inappropriate use of objects to represent variables, but very few teachers did. Instead, many teachers appreciated that the representation relates to everyday life and that it is memorable.

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References

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