

From modelling perspectives to analyse the mathematics grounding activities in classes: Take the game of adding and subtracting decimal numbers module as an example

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Orchestrating interesting and informative math activities within the limited classroom time is a complex task. Teachers need to master the game and course content at the same time and encourage students to participate in the construction of the concept of decimals. Through interesting mathematics activities, students are motivated to participate in the classroom, so that they can experience and construct models of mathematical concepts. This article aims to use the perspective of modelling as an analytical structure to understand how the mathematics grounding activities (MGA) are used in class and further to know its teaching effectiveness. In this study, we applied a hybrid approach. Participants are 28 third-grade students from urban schools and a teacher who has been teaching for 20 years. Data collection included observation videos, semi-structured interviews in five classes, and a learning attitude scale.

The results revealed that : (i) The teaching of the teacher in a decimal unit combined with MGA (The Game of Adding and Subtracting Decimal Numbers) mostly corresponds to the modelling teaching stage such as model construction, model validation, and model application; (ii) The teacher often use students' problem-solving results as teaching materials and invited students to evaluate, compare, and explain their peers' answers; (iii) If necessary, the teacher will be given a question as scaffolding integrate students' responses and re-narrate to help students construct and validate models; (iv) Using MGA in the classroom can improve students' interest in mathematics learning and self-confidence. (v) Students hoped that the mathematics class can be conducted like MGA.

References

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