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The mathematics textbook at tertiary level as curriculum material – exploring the teacher’s decision-making process.

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Summary: This paper reports on a study about how the mathematics textbook was perceived and used by the teacher in the context of a calculus part of a basic mathematics course for first-year engineering students. The focus was on the teacher’s choices and the use of definitions, examples and exercises in a sequence of lectures introducing the derivative concept. Data were collected during observations of lectures and an interview, and informal talks with the teacher. The introduction and the treatment of the derivative as proposed by the teacher during the lectures were analysed in relation to the results of the content text analysis of the textbook. The teacher’s decisions were explored through the lens of intended learning goals for engineering students taking the mathematics course. The results showed that the sequence of concepts and the formal introduction of the derivative as proposed by the textbook were closely followed during the lectures. The examples and tasks offered to the students focused strongly on procedural knowledge. Although the textbook proposes both examples and exercises that promote conceptual knowledge, these opportunities were not fully utilized during the observed lectures. Possible reasons for the teacher’s choices and decisions are discussed.

Classification: U25 D35

Keywords: mathematics textbooks; lectures; engineering students; procedural knowledge; conceptual knowledge; teacher knowledge

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