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A Definition of "Mathematics" and Its Pedagogical Consequences - Focus on the Transition between Proof Schemes

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Current teaching practices tend to view mathematics in terms of subject matter, such as definitions, theorems, proofs, problems and their solutions, not in terms of the conceptual tools that are necessary to construct such mathematical objects. This talk has two main goals: The first goal is to define these two categories of knowledge and explain why both categories are needed. The definitions and explanations are oriented within a theoretical perspective called DNR-based instruction in mathematics. Central to DNR is the distinction between way of understanding and way of thinking and the definition of "mathematics" in terms of these two constructs. The second goal is to discuss curricular and instructional implications of this definition, in particular, and of DNR, in general. While examples from different areas of mathematics will be presented, the focus will be on proof; more specifically, on the transition from empirical proof schemes to deductive proof schemes.

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