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**Validating affordances as an instrument for design and a priori analysis of didactical situations in mathematics.**

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Summary: The aim of the presented case study is to investigate how coherent analytical instruments may guide the a priori and a posteriori analyses of a didactical situation. In the a priori analysis we draw on the notion of affordances, as artefact-mediated opportunities for action, to construct hypothetical trajectories of goal-oriented actions that have not yet been initiated by an actor. These hypothetical action trajectories guide the design of a didactical situation, involving trigonometry in triangles and on the unit circle, for the specific purpose of illuminating how students in Swedish upper secondary school handle conceptually challenging tasks without making use of calculators. The a posteriori analysis puts corresponding focus on the actions that students have actually engaged in with respect to the available artefacts. We conclude that affordances, when embedded in the presented methodological framework, may be considered as a scientifically valid instrument for designing and evaluating didactical situations in mathematics.

*Classification:* D40 G60 D20

*Keywords:* teaching methods; mathematical concepts; trigonometry; affordances; didactical situations; design-based research; validity

<http://www.cimt.plymouth.ac.uk/journal/sollervall.pdf>