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Geometry and metacognition: an analysis of Piaget's and van Hiele's perspectives.

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The paper will work toward a synthesis of the theories of metacognition that are implicit in the work of van Hiele and Piaget. After describing two features of a "good" theory of metacognition that prefigure the contrast between van Hiele and Piaget – those of intentionality and generality – the paper will provide greater detail on van Hiele's and Piaget's theories with regard to the learning of geometry by school children. Van Hiele suggests that metacognition is an explicit or intentional awareness of knowledge that is implicit at a lower level of thought. Piaget is interpreted as suggesting that metacognition reaches its fullest development in the general skill of reflective abstraction at the level of formal operations – where the mathematics learner is "taming predicates and reducing them to a state of subjection" (Dienes, 1960, p. 22). The paper will then point toward a synthesis that can inform the difficult and timely issue of the role of content knowledge in metacognition in learning. (orig.)

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