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Mitchelmore, Michael C.; White, Paul

Development of angle concepts by progressive abstraction and generalisation.

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This paper presents a new theory of the development of angle concepts. It is proposed that children progressively recognise deeper and deeper similarities between their physical angle experiences and classify them firstly into specific situations, then into more general contexts, and finally into abstract domains. An angle concept is abstracted from each class at each stage of development. We call the most general angle concept the standard angle concept. To investigate the role of the standard abstract angle concept in conceptual development, 192 children from Grades 2 to 8 were tested to find how they used it in modelling 9 physical angle situations and in expressing similarities between them. It was found that the standard angle concept first develops in situations where both arms of the angle are visible. Even at Grade 8, there are still significant proportions of students who do not use standard angles to represent turning and sloping situations. Implications for theory and practice are explored. (Abstract)

Classification: G42

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