

FROM GEOMETRICAL FIGURES TO LINGUISTIC RIGOR:
VAN HIELE'S MODEL AND THE GROWING OF TEACHERS AWARENESS.

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The work takes off from a curriculum design elaborated within a school-university working group for students aged 14-16. The observational study focused on how teachers manage the project in order to lead students to the full understanding of the significance of the *definition* meant as the expression of the minimal of a figure, i.e. as the nucleus of the idea of *necessary and sufficient condition*. We used van Hiele's Theory in order to encourage expert teachers to reflect on a curriculum previously implemented and on their own practise. We registered with evidence that teachers' awareness of the van Hiele's level has a positive influence on students' learning.

The itinerary has been developed through individual worksheets alternated with slots of collective discussion and of reorganization guided by the teachers. We considered that in a teaching prospective the scope for a correct definition is to develop awareness of *what a definition is* better than to explain *what an object is*; i.e. we undertook the difference between descriptive definition and prescriptive definition.

Exemples from the project materials, teachers' observations on students's written work, collective discussion and behaviour will be illustrated in the oral communication.

Observations. 1. a good homogeneity was reached in all the eight classes; 2. teachers recognized in the learning process many actions, i.e., in van Hiele' conception, the *essence of geometry*; 3. teachers declared to feel they have learned to adapt themselves better to the students; 4. we observed the two different registers into which action research methods leads to be active: the register of practitioners' reflections on their own action and the register into which researchers in Mathematics Education are active.

Two remarks on the way in which the idea of inclusion and the set schemata are used arose from students and teachers observation and will be briefly outlined in connection with an analysis of some Euclid's proposition.

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