Discursive Rendition of Van Hiele Levels
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The Van Hiele theory (1959) is a well-known framework to understand students’ geometric thinking at different levels. The discursive nature of the theory suggests that thinking as communication made distinct by its repertoire of admissible actions and the way these actions paired with re-actions, and therefore, it is possible to view each of the van Hiele levels of thinking as its own geometric discourse (Sfard 2008).

The study examines the usefulness of viewing the van Hiele theory as five levels of geometric discourses. In particular, based on the van Hiele theory and Sfard’s framework, this study develops a model that describes each van Hiele level as a level of geometric discourse with respect to word use, routines, endorsed narratives and visual mediators. Pr-service elementary teachers’ geometric thinking was explored in the context of quadrilaterals. The study started with sixty-two pre-service teachers who participated in a van Hiele geometry pre- and post-tests, and then recruited twenty of them for the pre- and post interviews.

Aligning pre-service teachers’ test results with analyses of their geometric discourses from the pre- and post-interviews, it shows the variations of geometric discourses at the same van Hiele level among different prospective teachers, as well as changes in geometric discourses within a van Hiele level for the same pr-service teacher (Wang, 2011). The examination of each van Hiele level with four characters of discourse (word use, routines, endorsed narratives and visual mediators) demonstrated how thinking is communicated through what pre-service teachers say and do. The findings show that discursive analysis allows us to see the details of these teachers’ geometric thinking across van Hiele levels, as well as within a level. The discursive lens not only enhances our understanding of the range inherent in each van Hiele level, but also demonstrates the benefit of revisiting van Hiele theory with discursive lens in order to better understand how students’ geometric thinking develops.

References

