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**Van Hiele levels of pre- and in-service Turkish elementary school teachers and gender related differences in geometry.**

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Summary: This study aimed to investigate the reasoning stages of pre- and in-service elementary school teachers in geometry. A total of 186 pre- and in-service Turkish elementary school teachers participated in the study. The researchers used a multiple-choice geometry test to find out the participants' van Hiele levels. After the collection of the data, the independent samples t-test with  $\alpha = .05$  was used in the analysis of the quantitative data. The study revealed that the pre- and in-service elementary school teachers showed the first four van Hiele levels, visualization, analysis, ordering and deduction in different percentiles and that there was no difference in terms of reasoning stages between the pre- and in-service elementary school teachers. Moreover, although there was no gender difference found regarding the geometric thinking levels between male and female in-service elementary school teachers, there was a gender difference detected with reference to reasoning stages between male and female pre-service elementary school teachers favouring males.

*Classification:* G49 C49 C39 B52

*Keywords:* mathematics education; research; geometrical thinking; van Hiele reasoning stages; quadrilaterals; mathematical ability; preservice teachers; inservice teachers; primary education; teacher characteristics; gender differences; comparative studies