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The impacts of undergraduate mathematics courses on college students' geometric reasoning stages.

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Summary: The purpose of this study is to investigate possible effects of different college level mathematics courses on college students' van Hiele levels of geometric understanding. Particularly, since logical reasoning is an important aspect of geometric understanding, it would be interesting to see whether there are differences in van Hiele levels of students who have taken non-geometry courses that emphasize or focus on logic and proofs (Category I) and those that don't (Category II). We compared geometric reasoning stages of students from the two categories. One hundred and forty nine college students taking various courses from the two categories have been involved in this study. The Van Hiele Geometry Test designed to find out students' van Hiele levels was used to collect data. After the collection and analysis of the quantitative data, the participants' van Hiele levels are reported and the reasoning stages of two groups are compared. The results show that students taking logic/proof based courses attain higher reasoning stages than students taking other college level mathematics courses, such as calculus. The results may have implications that are of particular interest to teacher education programs. Finally, the results also confirm a previous assertion about correlation between van Hiele levels and proof writing.

Classification: C74 C75 C34 C35
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