

This study investigated the effect of van Hiele Phase-based Instruction (VHPI) on Ghanaian Pre-service Teachers' (PTs') geometric thinking in terms of the van Hiele Levels. A pre-test post-test quasi-experimental design was employed. There were 75 PTs each in the experimental group and the control group. Van Hiele Geometry Test (VHGT) was administered to all PTs as both pre-test and post-test. PTs in the experimental group were taught two-dimensional geometry using VHPI while the control group was instructed by conventional instruction. Chi-square results showed that the PTs in both groups had increment in their post-VHGT as compared to the pre-VHGT. However, the PTs in the experimental group achieved better levels of geometric thinking as compared to those in the control group ( $\chi^2 = 58.949, p < 0.05$ ). Again, results from paired samples t-test indicated a significant difference in mean scores between control and experimental groups favouring PTs in the experimental group ( $t = 30.776, p < 0.05$ ). The significant improvement in the performance of the experimental group having more PTs at level 3 and 4 than at level 0, 1 and 2 suggest that the VHPI served a useful pedagogical approach, impacted positively on PTs geometric thinking levels and has the potential of improving teaching and learning of geometry in schools than the conventional approach. Van Hiele Phase-based instruction

Van Hiele levels

Geometric thinking

Pre-service teachers

Ghana