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Investigating plane geometry problem-solving strategies of prospective mathematics teachers in technology and paper-and-pencil environments.

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Summary: This study aims to investigate plane geometry problem-solving strategies of prospective mathematics teachers using dynamic geometry software (DGS) and paper-and-pencil (PPB) environments after receiving an instruction with GeoGebra (GGB). Four plane geometry problems were used in a multiple case study design to understand the solution strategies developed by 2 prospective teachers. The results revealed that although the participants mostly used algebraic solutions in the PPB environment, they preferred geometric solutions in the GGB environment even though algebraic solutions were still possible (the software did not preclude them). Furthermore, different proofing strategies were developed in each environment. This suggests that changing the environment may prompt students to seek for additional solutions, which, in turn, results in a deeper understanding of the problem. As such, using both environments simultaneously in solving the same problems appears to bring about important benefits.

Classification: D59 G49 U79

Keywords: dynamic geometry software; GeoGebra; mathematical problem solving; plane geometry; triangles
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