

# PRE-SERVICE TEACHERS' ABILITIES TO NOTICE STUDENTS' ANSWERS TO GEOMETRIC PATTERN PROBLEMS

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A part of teachers' professional practice is evaluating students' outcomes, in particular *noticing of students' thinking*. Students may be introduced to algebra by solving *geometric pattern (gp) problems*. Several authors have defined levels of competence in noticing of students' thinking when solving gp problems and have described teachers' abilities to analyse students' solutions. Our objective was to analyse and classify secondary ps-teachers' acts of noticing of students' answers to gp problems. *Professional noticing* focuses making sense of students' answers. We focused on strategies (Arbona, 2016), using graphical patterns (*visual, numerical*), calculating values of terms (*counting, recursive, functional, proportional*), and calculating positions of terms (*use of equations, correct/wrong inversion, trial and error*). A framework (Van Es & Sherin, 2008) was adapted, identifying categories: *ways of using graphical patterns, calculating values of terms and calculating positions of terms*. The study was based on a teaching experiment with 58 secondary ps-teachers without prior knowledge about gp problems. Before, we posed four gp problems (Figure 1) to secondary students in grades 7 and 8. The teaching experiment had three parts: a) solve the four gp problems; b) present to the ps-teachers the structure of gp problems and the criteria to analyse answers; c) analyse students' answers to the four gp problems.

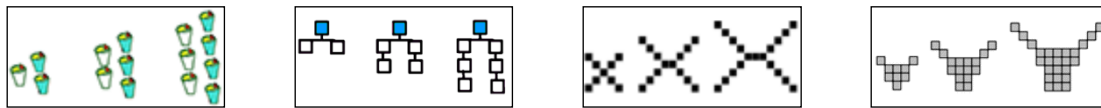


Figure 1: The three first terms as presented in the gp problems used

Data show that the ps-teachers had little difficulty to identify students' ways of using the graphical patterns (76% correct) but had more difficulties to identify the types of calculations of values of terms (47% correct) and positions of terms (47% correct). These results are in the line of results obtained by other researchers.

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## References

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