

## SEMI-STRUCTURED PROBLEM POSING CASES OF PROSPECTIVE MATHEMATICS TEACHERS: EXPERIENCES AND SUGGESTIONS

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### ABSTRACT

Problem posing which a way of analytical thinking is a process which is based on mathematical experiences and in which interpretations which are created by moving from concrete situations are transformed into meaningful mathematical problems. Problem posing which helps teachers about to what extent the learning is realized informs us about the problematic fields that needed to be improved and emphasized in teaching-learning environments. For this reason, it is necessary for teachers to have a deep understanding about problem posing activities.

In this sense, the aim of this study is to evaluate semi-structured problem posing cases of prospective mathematics teachers about Ratio and Proportion Subject', to determine the experiences of the prospective teachers during problem posing process and to elicit suggestions regarding the experienced difficulties (if any). For this purpose a data collection form was created by the researchers. This data collection form has three parts which were *i) The task of posing semi-structured problems, ii) The experiences during problem posing process (for example; the difficulties faced) and iii) Suggestions for solutions.*

The data collection form was carried out with 59 prospective primary mathematics teachers. The prospective teachers were given 40 minutes to fill in this form. 'Problem Posing Evaluation Form (PPEF)' which was developed by the researchers was used during the analysis of the data obtained from first part of the data collection form. This evaluation form is consisted of four main dimensions and three sub-dimensions for each dimension. The main dimensions are as in the following: *i) Problem text (language and expression), ii) The compatibility of the problem with the mathematical principles, iii) The type/structure of the problem and iv) The solvability of the problem.* The first part data was evaluated with this evaluation form by the researchers separately and then the results were compared. The differences appeared were discussed and an agreement was reached between the researchers. At the end the evaluation results created regarding the each sub-dimension were given on the basis of frequency (f) and percentage (%). Content analysis was used for the analysis of the data obtained from the second and third parts of the form, and the program which is called as NVivo 10 was used in content analysis.

In conclusion, it was concluded that prospective mathematics teachers posed clear and understandable problems which were compatible with the mathematical principles and which were in the form of simple and easy problem types. Besides, it was concluded that posed problems had solvable problem features. The experiences/difficulties faced during problem posing process determined as; inability to construct the problem, finding the data as insufficient, inability to pose creative problems, inability to provide a whole number for the solution and inability to arrange the level of problem according to the levels of the students. The solutions which were proposed for the difficulties faced were determined as in the following; no data limitation, carrying out problem solving and problem posing studies, having a sound content knowledge and using additional sources.

**Key Words:** Semi-structured problem posing, experiences, solutions.