HOW DO PRIMARY SCHOOL MATHEMATICS PRE-SERVICE TEACHERS CONSIDER MATHEMATICAL PROOFS?

Savas Basturk

Marmara University, Istanbul/Turkey

The literature related to proof informs us that researchers emphasize giving place of this concept in all students' mathematical experiences throughout the grades, even in the early grades (Ball, Hoyles, Jahnke and Movshovitz, 2002; Hanna, 2000; Hanna and Jahnke, 1996; NCTM, 2000) for some reasons. In this paper we aimed at investigating pre-service teachers' conceptions about proof in mathematics and mathematics teaching.

The participants in this study were 40 second year pre-service teachers who were enrolled in the department of Primary School Mathematics Education. To determine pre-service teachers' opinions about mathematical proof, a 5-point Likert-type questionnaire was administered. The content validity of this questionnaire was established by a panel of experts consisting of three educators who were teaching in the department of Primary School Mathematics Education. The reliability coefficient of the Likert-type questions was calculated as 0.85 (Cronbach's Alpha). To minimize these known negative consequences of close-ended questions and to go deeper in our survey by allowing respondents to include more information, that is, feelings, attitudes and understanding of the subject, eight pre-service teachers were selected to participate in follow-up interviews after the analysis of their answers to the questionnaire.

The results have revealed that the pre-service teachers think that mathematical proof has an important place in mathematics and mathematics education. The pre-service teachers' studying methods for exams based on imitative reasoning which can be described as a type of reasoning built on copying proof e. g., by looking at a textbook or course notes proof or through remembering a proof algorithm. Moreover they addressed to the differences between mathematics taught in high school and university as the main cause of their difficulties in proof and proving.

References

Ball, D.L., Hoyles, C., Jahnke, H.N., & Movshovitz-Hadar, N. (2002). The teaching of proof. In L. I. Tatsien (Ed.), Proceedings of the International Congress of Mathematicians, Vol. 3, (pp. 907–920). Beijing: Higher Education Press.

Hanna, G., & Jahnke, H.N. (1996). Proof and proving. in A. J. Bishop, K. Clements, C. Keitel, J. Kilpatrick, & C. Laborde (Eds.), International handbook of mathematics education, (pp. 877–908). Netherlands: Kluwer Academic Publishers.

NCTM (2000). Principles and standards for school mathematics. Reston, VA: National Council of Teachers of Mathematics.

2- 10

2010. In Pinto, M. F. & Kawasaki, T.F. (Eds.). *Proceedings of the 34th Conference of the International Group for the Psychology of Mathematics Education*, Vol. 2, pp. 10. Belo Horizonte, Brazil: PME.