

## Exploring Pre-service Teachers' Mental Constructions When Solving Problems Involving Infinite Sets

Deonarain Brijlall<sup>1</sup> and Aneshkumar Maharaj<sup>2</sup>

<sup>1</sup>*Department of Mathematics, Durban University of Technology, South Africa*

<sup>2</sup>*School of Mathematics, Statistics and Computer Science,  
University of KwaZulu-Natal, South Africa*

*E-mail: <sup>1</sup><deonarainb@dut.ac.za>, <sup>2</sup><maharaja32@ukzn.ac.za>*

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**ABSTRACT** In this study, the researchers explore the meaning of the, *is equal to* symbol by exposing pre-service teachers (n = 38) to two tasks. The first task was baseequivalence of two countable infinite sets. The second task focused on the comparison of the two numbers 0,9 and 1. The study was carried out at a South African university, where activity sheets comprising the two tasks were completed by pre-service teachers specializing to become high school mathematics teachers. Their written responses were analyzed against the initial itemized genetic decompositions formulated in accordance with APOS (Action-Process-Object-Schema) Theory. The findings of the exploration led to modified itemized genetic decompositions. These modified genetic decompositions have pedagogical implications. They also contribute to the APOS theory.