

## **Investigating misconceptions about acids and bases among pre-service science teachers**

### **ABSTRACT**

This study examines prevalent misconceptions among students regarding the fundamental concepts of acids and bases, which often arise during the learning process. This study aims to pinpoint misconceptions held by preservice science teachers in the realm of acids and bases; 117 university students from diverse educational backgrounds, enrolled in three distinct courses: Biology, Chemistry, and Physics from the Faculty of Education, participated in the study. Using a structured questionnaire, the research identified 11 misconceptions out of 26 items related to acid and base concepts among pre-service teachers, while 15 items showed a correct understanding. Notably, three misconceptions exhibit the highest prevalence, namely the universal indicator of strong alkali (71.7%), the calculation-related concentration of acids and bases (69.3%), and the procedural steps for preparing a solution with a specified concentration using the dilution method (65.8%). The analysis indicates that although pre-service teachers generally understand acid and base concepts well, some misconceptions persist. Additionally, correlations between gender, university major, and understanding of these concepts were found. Further global research is recommended to identify misconceptions among university students. Comprehensive research in Malaysia could help educators and students address these misconceptions in Chemistry education.