

Teaching Physics and Chemistry in Primary Education: Conceptions and Practices of Pre-service Teachers in Uruguay

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This study explores how pre-service primary teachers' Physics and Chemistry conceptions influence lesson planning and classroom practices. Mixed-methods, cross-sectional design was adopted, combining the nationwide administration of the EBAPS questionnaire with an ethnographic qualitative approach based on lesson plan analysis and in-depth interviews. Preliminary results reveal tensions between teachers' stated conceptions of the nature of science and their pedagogical decisions. Although inquiry-based approaches dominate written plans, interviews show difficulties sustaining these practices, particularly regarding open-ended questioning and experimental activities. These findings underscore the need to strengthen initial teacher education concerning the nature of science and its teaching.

Education level:

Pre-service and in-service teacher education

Physics topic:

Other

Research focus:

Student conceptions / Preconceptions / Misconceptions

Research method:

Mixed method (qualitative \textbackslash{}& quantitative)

Organizing preference criteria:

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DiKoLAN-SK: Measuring pre-service science teachers' academic self-concept of digitalization-related competencies

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Digital technologies increasingly shape science learning and teaching, yet teacher education lacks science-specific instruments to assess pre-service teachers' academic self-concept regarding digitalization-related competencies. Building on the DiKoLAN framework, we developed DiKoLAN-SK, an 80-item questionnaire covering seven science-specific competency areas, two competency levels (Describe, Use/Apply), and four TPACK-related knowledge foci. In a sample of $N = 286$ pre-service science teachers from Germany and Switzerland, expert review and pilot feedback supported comprehensibility, and confirmatory factor analyses supported the intended multidimensional structure. Known-groups comparisons provided additional validity evidence. DiKoLAN-SK enables low-burden diagnosis and evaluation in science teacher education.

Education level:

Pre-service and in-service teacher education