

An experience on the analysis of visual representations in simulators for teacher training

A. Espinoza-Cara^{1,2}, M.C. Bauza-Castellanos^{1,2}, J. Schmittlen-Garbocci²,
A. Angarita-Laverde³

¹Ministerio de Educación de Santa Fe, Rosario, Santa Fe, Argentina;

²Universidad Nacional de Rosario, Rosario, Santa Fe, Argentina;

³Universidad Nacional de Colombia, Bogotá, Colombia,
e-mail: andres.espinoza.cara@gmail.com

The present work is framed in a proposal for the analysis of models and their representations in simulators for student teachers in chemistry. Among the ICT resources are simulators, which are software tools that allow simulating physical-chemical processes represented on a graphic screen. In general, all simulations present some possibility of modifying the simulation parameters in order to observe and analyze the consequences that these changes have on the process under study [1]. Simulators are an instructional resource that began to be widely used during the pandemic and virtualization of science teaching. Such simulators consist of animations containing different levels of representation of the subject matter: (1) sensory or perceptual level (macroscopic level), (2) particle level: atoms, molecules or ions (microscopic or submicroscopic level) and (3) symbol level, formulas and equations (symbolic level) [2]. There is great difficulty in trainee teachers in interpreting, applying, and moving between the different representational levels. With the aim of promoting these skills, we generated a research space to analyze different types of representations and models. In the first instance, the students carried out an extensive search of images in different simulators for different chemistry topics. Only simulations that had a high conceptual content and sought the construction of a mental model of the phenomenon were selected. The analysis of the different levels of representation of matter in the images, as well as the analysis of the concepts and models represented, allowed teachers to develop skills for: i) critical evaluation of resources, ii) selection criteria for simulations and iii) design of images for educational materials.

References

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