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New Approaches in Radiation Protection Education

In the teaching of Radiation Protection, the following sequence has traditionally been used: Theory; Problems; Practical Laboratory Work and Supervised Practical Work, the relationship between them varying according to the educational level of the addressees and the objective of the training. However, although all members of this scientific and technological community know the theory and its practical application measures, its systematic application in real work scenarios presents a great dispersion on the part of occupationally exposed personnel. (Einisman, 2013)

The general objective of this work is to postulate a new epistemological basis for the teaching of Radiation Protection based on the concept of Phronesis or "practical wisdom, prudence or precaution" (Muñoz et al., 2011) applied to the optimization of processes and procedures with ionizing radiation (González, 2010). Its particular objective is to show its didactic implementation through the presentation of an advanced simulator prototype for use in Higher Education, Vocational Training and Continuing Education in activities that use open sources of radioisotopes, such as Health, Oil, Mining or Industry. (Einisman, 2021)

As has been widely demonstrated in the transportation industry, simulation-based training (SBT) is an exemplary solution to develop professional capabilities. SBT is presented as a superior option to traditional didactic models in terms of speed of learning, amount of information retained, and problem-solving capabilities in work practice (Bilotta et al., 2013; Issenberg et al., 2005; Einisman, 2018).

The use of simulators allows students and workers to construct and critically analyze the relationships between physical, environmental and occupational factors, specific to each activity. The proposed system allows evaluating the effects of each of the decisions taken on the radiation dose received in each operation and the projected annual dose. Thus, the user can conclude personally and experientially - not only theoretically - that maximizing protection in each operation is the only way to minimize risks throughout his working life. In this way, the synergy between epistemology, didactics and technology acts to promote a greater awareness of care among students and workers, reducing the occupational dose throughout working life.

Speakers email

ceinisman@hotmail.com

Speakers affiliation

National University of Tres de Febrero (UNTREF).

Name of Member State/Organization

Argentina

Primary author: Dr EINISMAN, Carlos (Asociación Argentina de Técnicos en Medicina Nuclear.)

Presenter: Dr EINISMAN, Carlos (Asociación Argentina de Técnicos en Medicina Nuclear.)

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