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Exploring Student Perspectives on STEM through Fire Ecology: Epistemological and Social Insights from NoSTEM Education

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In the dynamic realm of education, we explore high school students' perspectives on science and the Nature of STEM through a study with 96 participants. Fire Ecology serves as a pedagogical tool, unraveling students' conceptions of the epistemological and socioethical dimensions of STEM. The study dives into the interdisciplinary aspects of Fire Ecology, addressing scientific uncertainty, interdisciplinarity, and diverse STEM methodologies.

Sustainability emerges as a central theme, as students examine how wildfires impact ecosystems and communities, sparking discussions on resource distribution and environmental justice. The results offer a detailed understanding of students' technoscientific views within this interdisciplinary context, contributing to the enrichment of their perspectives on science through NoSTEM education.

Analyzing the instrument results reveals a 29% accuracy in the cognitive-epistemic dimension and a 40% accuracy in the socio-political dimension. This indicates a noticeable gap in students' understanding of the epistemological aspects of technoscientific knowledge, highlighting an area for improvement in conveying STEM principles.

Interestingly, the relatively higher accuracy in the socio-political dimension suggests students possess awareness of the societal and political implications of science, aligning with the NoSTEM perspective. This understanding of science's interface with broader societal issues emphasizes the integration of STEM with social and ethical considerations.

These findings emphasize the need for a targeted approach to enhance students' cognitive-epistemic understanding within the NoSTEM framework, potentially strengthening the effectiveness of NoSTEM education in cultivating a comprehensive and socially aware perspective on STEM disciplines.

Biography:

Víctor Martínez-Martínez holds a B.Sc. in Chemistry, a M.Ed. in Secondary Education, and a M.Res. in Educational Research and Innovation. He is currently researching and teaching in the Science Education department at the University of Burgos (Spain). Pursuing his Ph.D. in Specific Didactics, his research focuses on the Nature of STEM, emphasizing integrated learning and the incorporation of history, philosophy, and sociology of science in science education. Passionate about shaping holistic STEM education, he aims to contribute to redefining approaches to student perspectives and fostering social awareness through disciplines like Fire Ecology.