1 - Learning Science: Conceptual Understanding | Empirical

SP - (15978) - INVESTIGATING SECONDARY SCHOOL STUDENTS' ALTERNATIVE CONCEPTIONS OF ANTIBIOTICS' MECHANISMS AND THE EMERGENCE OF ANTIBIOTIC RESISTANCE

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Short Abstract

Infections caused by antimicrobial-resistant pathogens offer a complex and relevant problem at the interface of Science|Environment|Health pedagogy. Because of its potential to profoundly affect humanity's personal, social, and global behavior patterns in the coming years, antibiotic resistance is gaining importance for public discourse and science education. The present qualitative study explores secondary school students' alternative conceptions and underlying intuitive reasoning patterns about this focal issue. Data were collected by using an open-ended questions assessment instrument and semi-structured interviews. A thematic qualitative analysis process was applied to the students' contributions to elicit their alternative concepts and intuitive conceptional patterns of thinking. Results show that students had a multi-perspective picture of antibiotics' mechanisms and the emergence of resistance to antibiotics. Intuitive reasoning, including teleological, essentialist, and anthropocentric reasoning, is prevalent in most of the students' explanations, suggesting that challenges in understanding the resistance phenomenon related to antibiotics may be grounded in firmly seated intuitive conceptual frameworks. Knowledge about these conceptions and their underlying intuitive reasoning patterns should enable teachers to relate to the students' conceptions when designing lessons to facilitate meaningful science instruction.

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