Tensions in Science Education: Insights from an Air Quality Study

Dr Elisabeth Unterfrauner[1], Dr Claudia M. Fabian[1], Mrs Teresa Schäfer[1], Dr Barbara Kieslinger[1]

[1]Centre for Social Innovation

The InChildHealth project focuses on improving indoor air quality in schools, targeting children aged 6-13 in seven European cities. Utilizing science education and citizen science, the project engaged students in collecting air quality data, measuring pollutants such as chemicals, particulate matter, and biological contaminants. This data collection was conducted with the assistance of external scientists and teachers. Post-project interviews with teachers revealed a generally positive reception but highlighted several tensions. The primary challenge was balancing theoretical instruction with practical application. Students exhibited varying preferences, with some benefitting more from hands-on activities and others needing more theoretical background to engage meaningfully in practical tasks. This necessitates flexible teaching strategies tailored to diverse student needs. The involvement of external scientists through lectures, seminars, and workshops enriched the curriculum by providing fresh perspectives and practical insights. However, it also posed challenges, particularly if the scientists lacked the pedagogical skills necessary for effective student interaction. Therefore, it is crucial that these experts are well-prepared and trained in educational methods. Another issue involved the technical devices used for air quality measurements. While these devices served as practical tools linking students directly to scientific studies, proper introduction and integration were vital to prevent misuse and ensure student trust. Data collection posed additional challenges, as there was a tension between the extensive data required by scientists and the willingness of students and parents to complete lengthy questionnaires. Designing concise surveys and clearly communicating the importance of the data were essential to address this issue. Overcoming these challenges requires meticulous planning, adaptable teaching methods, and effective collaboration between educators and external scientists to enhance science education sustainably.