Science for Societal Resilience: The Role of Schools and (Social) Science Education

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In recent years, science and scientists have come under increasing scrutiny, with a growing wave of scepticism and delegitimization undermining not only scientific results but also the very foundations of scientific inquiry. This erosion of trust is particularly acute in the social sciences and humanities, disciplines that are crucial for understanding and navigating the complexities of modern society. The marginalization of these fields is not merely an academic concern – it poses a threat to informed public discourse, democratic governance, and the collective ability to respond to global challenges, namely – our societal resilience. Broadly speaking, schools and teachers are one of the most crucial players in developing trust and interest in science, understanding of science, and habits of consuming scientific content. How teachers teach about science, depends on their own science-related values, beliefs and knowledge. Hence, the aim of the study is to examine secondary school teachers' scientific literacy, their perceptions of scientific value of different school subjects, and practices of developing science literacy of students.

We look at these aspects in the context of the development of scientific school culture. As the theoretical framework of the study we employ the Social domain theory of Derek Layder and several models of scientific literacy. We pay particular attention to the Layder's domain of psycho-biography in relation to domains of social setting and contextual resources that shape teachers views and attitudes towards science, including the scientific value of various school subjects. Our empirical analysis is based on 47 semi-structured interviews with different subject teachers and a survey of teachers (N=579), where we examined the following: 1) perceived scientific value of school subjects; 2) scientific literacy of teachers; 3) attitudes towards pseudoscience. The study was carried out as part of the research project funded by the Latvian Council of Sciences (title of the project "Scientific school culture for sustainable society"; project No. lzp-2021/1-0135).

The results of our study indicate that teachers' understanding about scientific literacy refers mainly to the procedural dimension of scientific literacy. It manifests also through reported teaching practices. In teachers' views, scientific literacy is related to various other literacies, especially media literacy, information literacy. Scientific literacy, according to teachers, is related to specific professions (not necessarily their own), and perceived scientific value of school subjects aligns with the traditional curriculum hierarchy ladder (with the "mighty triad" - Physics, Chemistry, Biology – on the top). Techers' practices of developing students' scientific literacy are aligned with the external/national trends: school rankings, student final test scores, student achievements in Olympiads etc.

This study draws attention to the roots of the devaluation of science, especially the social sciences, and underscores the necessity of reaffirming science in school curricula and teacher training. What our study highlights, based on our data, is that while natural sciences often retain a baseline of trust due to their tangible technological outputs, social sciences are frequently dismissed as "soft" or overly politicized, even perceived as not being scientific. This false dichotomy which prevails in the teachers' perceptions, reflect a larger societal belief, and most certainly fails to recognize and acknowledge that the social sciences apply rigorous methodologies: quantitative, qualitative, and mixed - to investigate human behaviour, societal structures, and cultural dynamics.

This devaluation of (social) sciences, if not tackled properly, becomes dangerous in times of crisis. Whether in the context of the COVID-19 pandemic, climate change, economic inequality, or migration, the social sciences provide the frameworks for understanding collective behaviour, risk perception, and compliance with public measures. Rebuilding trust in science at schools must begin with reaffirming its core values through well-thought out teacher training. But it also requires a shift in educational policy making that fosters the right attitudes toward scientific thinking from an early age - especially regarding the social sciences. What is important to acknowledge is that science is not merely a body of facts - it is a method of inquiry that applies equally to understanding biological, physical phenomena, as to understanding social systems and individual behaviour. Dismissing social science as unscientific which is a trait that manifests itself in the empirical material collected in the present study, leads to ignoring the evidence-based practices and fails to equip society with critical resources for decision-making and long-term societal resilience.

Keywords

scientific school culture, scientific literacy, epistemic beliefs, curriculum hierarchy, school teachers, societal resilience