



Understanding Science Teachers' Epistemic Beliefs and Their Pedagogical Practices

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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Abstract

Teaching depends on two main pillars: the teacher's epistemic beliefs and their pedagogical practices. The first pillar adds to the theoretical framework, and the second pillar focuses on the practical aspect. The objectives of the present study are to analyse the relationship between science teachers' epistemic beliefs and their pedagogical practices; to identify specific areas of alignment and misalignment between teachers' epistemic beliefs and their teaching practices in science, and to explore how incomplete or inaccurate epistemic beliefs about the nature of science influence instructional decisions and teaching strategies. The study is qualitative in nature. The sample size is 50 in-service science teachers teaching classes from 6th to 12th grade, selected through purposive sampling. The interview findings revealed a nuanced relationship between science teachers' epistemic beliefs and their pedagogical practices, showing that while many have sophisticated views, a significant "theory-practice disparity" exists. Notable misalignments occur when underdeveloped beliefs regarding the nature of science lead to passive, teacher-centred instruction rather than constructivist methods. These findings suggest that contextual barriers, such as rigid curricula and limited resources, often impede the operationalisation of epistemic beliefs, highlighting the need for targeted interventions to align theoretical understanding with classroom enactment.

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