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FROM INTERNATIONAL PROFESSIONAL DEVELOPMENT TO CLASSROOM PRACTICE: TEACHERS' REFLECTIONS ON IMPLEMENTING THE 5E INSTRUCTIONAL MODEL IN SCIENCE TEACHING

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ABSTRACT

Developing science teachers' pedagogical knowledge for effective teaching remains a central goal of teacher education. This study explores in-service science teachers' reflections on implementing 5E Instructional Model following the researcher's exposure to the approach through the Third Country Training Programme (TCTP) held in Malaysia and supported by the Japan International Cooperation Agency (JICA). After participating in the programme, the model was introduced to in-service teachers enrolled in a Science Education Honours programme in a rural university in South Africa. Teachers were required to design and implement lessons using the 5E model and reflect on their experiences. Guided by the framework of Topic-Specific Pedagogical Content Knowledge (TSPCK), the study analysed how teachers' reflections revealed aspects of pedagogical reasoning related to teaching specific science topics. Data was collected through reports and analysed using thematic analysis. Findings indicate that implementing 5E model supported teachers in developing several components of TSPCK particularly in recognising learners' prior knowledge, selecting appropriate representations and adopting conceptual teaching strategies that promote inquiry-based learning. However, challenges such as time constraints, limited resources and curriculum coverage pressures constrained full implementation. The study highlights how reflective practice combined with inquiry-based instructional models can support the development of topic-specific pedagogical knowledge among science teachers. Implications are discussed for science teacher education and professional development programmes seeking to strengthen inquiry-based teaching practices.

Keywords: 5E Instructional Model; Inquiry-Based Science Education; Reflective Practice in Science Teaching; Science Teacher Professional Development; Topic-Specific Pedagogical Content Knowledge