This study explores how experienced science teachers promote conceptual change. It examines how instructional strategies, learning methods (Darden, 1991) and conceptual change interrelate.

Three research methods (expert micro-teaching, verbal protocols and retrospective debriefing) were used. Data were video-recorded and managed using NVivo. Six groups of 11 year-old pupils took part (three girls and three boys) in each expert micro-teaching interview, led by a science specialist (Advanced Skills Teacher). A 'Concurrent Verbal Protocol and Retrospective Debriefing' interview (Taylor and Dionne, 2000) happened with the teacher approximately one month later. Six teachers participated altogether. About fifteen hours of interview data were analysed using grounded theory methods. The interpretivist theoretical perspective (symbolic interactionism) was underpinned by a social constructionist epistemology.

What can be considered evidence is inevitably affected by the researcher's methodological position. So what constitutes reliable evidence can be contentious. Appropriate criteria for evaluating the grounded theory emerging from this study were used. Interpretivist approaches for investigating conceptual change in school science are necessary to avoid dominance by positivist literature. This approach, proved successful in other fields (Pressley, 2000), is new to this context. The assumption that instructional strategy is a plan does not adequately explain the data collected here. However, abandoning attempts to unpick complicated interactions between pupils and teacher whilst learning takes place, leaves practitioners without guidance. Consensus exists among most conceptual change researchers that instructional strategies, learning methods and conceptual change must be considered together where possible. This present study proposes a grounded theory for how experienced science teachers promote conceptual change and questions how instructional strategy is understood in the literature.

Findings show that during and between sporadic periods of 'conceptual conflict' participants used eleven 'teaching and learning techniques'. The relative weight given to each technique was termed the 'strategic profile' of the teacher. 'Tactics' is the theory of the use of teaching and learning techniques in conceptual combat. 'Strategy' is the theory of the use of such conceptual combats to try to achieve an aim (here to promote conceptual change). Teachers (and pupils) demonstrated and described tactical and strategic behaviour. Techniques, tactics and strategies frequently failed. How participants managed such 'friction' was described. Teachers and researchers view classroom dynamics from different perspectives. This study argues that an interpretivist approach, which moves back and forth between the particular and the general, can help bridge the "gap" between theory and practice in this field (Duit et al., 2008, p.629).