

# Research on Developing a Generalized Framework for Conceptual Change in Science Education

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**Abstract:** Conceptual change is a critical issue in psychological and educational fields. From different backgrounds and beliefs, Researchers have investigated conceptual change and given rise to several theories for interpreting the processes and mechanism of conceptual change in the past two decades, like epistemology, ontology and framework theory. With the gradual deepening of studies on conceptual change, those theories have been developed, such as cognition-oriented theories were taken social/affective factors into account and different theories were integrated to a multidimensional framework for interpreting conceptual change in classroom, etc.

However, prior researches about conceptual change always focused on the learners aspects without thinking the characteristics of science contents. This study will develop a generalized framework for conceptual change in science education. The generalized framework for conceptual change in science education (GFCCSE) not only focus on the learners' situations, including learners' cognition, epistemology, ontology and learners' emotion and motivation, but also take science content into consideration, which was adopted the dimensions of content claimed by Richard White (1994) and then use Thorley's status analysis categories to assess the status of learners' conceptual change. Following the hypothetical generalized framework for conceptual change in science education, this study will select some important science concepts of thermodynamics, such as heat, temperature, heat conduction and heat equilibrium, to test the validity and reliability of this GFCCSE, and based on the empirical data to revise it. The empirical part of this research will be taken face to face interview individually and collaboratively. The subjects of this research will be from mainland China, who have been learned the science concepts of thermodynamics in their regular science classroom.