

## CHAPTER 6

# IMPLEMENTING CONTEXT-BASED EDUCATIONAL INTERVENTIONS TO ADDRESS ALTERNATIVE CONCEPTS OF THE SUN, EARTH, AND MOON AMONG FIFTH-GRADE STUDENTS

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### INTRODUCTION

Recent scholarly efforts have concentrated on elucidating students' comprehension of scientific concepts at primary, secondary, and tertiary levels. Investigations in this domain have consistently revealed that students often possess perspectives that diverge from standard scientific theories (Driver, Jane Dove, 1989; Gilbert et al., 1982). It has been observed that once these perceptions are integrated into a learner's cognitive framework, they become resistant to alteration, thereby influencing subsequent educational processes. It is further posited that these conceptions can only be reshaped effectively when presented in a more intelligible, convincing, and beneficial format (Novak, 1988; Nussbaum & Novick, 1982).

The range of terms used to describe students' scientific understandings includes 'alternative conceptions' (Novak, 1988), 'alternative frameworks' (Driver and Easley, 1978), 'preconceptions' (Osborne & Freyberg, 1985), 'alternative conceptions' (Atwood & Atwood, 1996), and 'ideas' (Kuiper, 1994). Despite extensive discussion regarding the most suitable terminology (Sanders, 1993), some consensus exists on using specific terms. For instance, 'alternative conceptions' are typically applied in contexts involving students' misunderstanding of formal scientific models or theories (Driver and Easley, 1978; Kuiper, 1994). The term 'error' is a scientifically incorrect response, contrasting with 'alternative conceptions,' which is viewed as an inaccurate mental model (Fisher & Lipson, 1986; Sanders, 1993). In this paper, 'alternative conception' is used to signify a belief substantially differing from the scientific consensus (Osborne et al., 1983).

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- Further research should be conducted on the longitudinal impact of context-based learning on students' conceptual understanding, building on the groundwork laid by this study.

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