Recognizing the importance of interdisciplinarity and effective pedagogical implementation, Earth science is incorporated into three of the six modules of an Environmental Education course (EDU452) at Simon Fraser University for teachers, through inquiry, constructivist and place-based learning. The action research encompasses two pilots with 52 participants in summer 2018 and 2019. Field observations, interviews and pre- and post-course surveys (MESEES) were employed to evaluate the course effectiveness and pedagogies. EDU452 effectively increased students’ recognition of Earth Science being fundamental and relevant. Inquiry learning promoted engagement, yet careful design of overarching questions and guidance adjusted according to individual’s pre-existing knowledge and the conceptual difficulty are recommended. Constructivist and place-based learning are widely accepted for offering personal ownership of learning, engaging experiences, impactful visuals, and local relevance of knowledge. Conceptual and experiential learners see the role of Earth Science differently. An integrated teaching strategy is believed to enhance the congruency across subjects.

**Keywords:** Earth Science; Teacher Education; Inquiry Learning; Constructivist Learning; Place-based Learning; Interdisciplinarity