

A COMPARATIVE STUDY OF ENVIRONMENTAL LITERACY OF STEM AMONG ELEMENTARY STUDENTS IN CHINA

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THEME:

STEM education and sustainability

BACKGROUND AND AIMS

Within the range of STEM contexts, environmental education provides students opportunities to develop a wide range of STEM skills through advancing systems thinking on solving practical problems from the perspective of sustainable development. The North American Association for Environmental Education and relevant partners, is developing programs to advance the integration of environmental education into STEM learning for youth. The development of environmental literacy is the end-goal of environmental education, to which has been attached great importance by the Chinese government under the background of ecological civilization construction. However, the evidence of the current environmental literacy of elementary students in China is limited and mixed, restricting the improvement of environmental education programs to cultivate anticipants and potential policymakers in future society affairs. Therefore, the study investigated the role of depositions and competencies in the relationship between knowledge and behaviors and how environmental literacy varied in Mainland China and Taiwan.

METHODOLOGY OR PROCESS(ES) UNDERTAKEN

We selected four schools in Xiamen and Taipei for research, two cities that are geographically close and both have mandatory environmental education legislation. A total of 835 seniors of elementary school responded to an environmental literacy survey (389 in Xiamen, 446 in Taiwan), including four dimensions of environmental literacy (knowledge, dispositions, competencies, behavior). Subsequently, an overall serial mediation model was constructed to reveal how the knowledge affected environmental behaviors of all participants.

RESULTS AND CONCLUSIONS

Several findings were listed as below:

- Students in two cities both chose “Family” as the main source of environment information, and “outdoor experiential learning” was the most preferred education method;
- The results of parametric tests showed that Xiamen students' average scores were higher on attitudes, skills, and behaviors than those of Taipei students, while Taipei students performed better on correct answer rate of knowledge;
- Intermediary model indicated that knowledge was related to environmental behaviors through the serial mediation of dispositions and competencies. The findings highlight the importance of strengthening knowledge and dispositions in determining competencies improvement and, consequently, in advancing environmental behaviors.

The results illustrated that school curricula should pay more attention to enhance students' knowledge, and more importantly, the educational programs should emphasize the experiential learning to help students translate environmental information into personally effective behavior.