ที่มา ติดต่อ: การพัฒนาขั้นบกการเรียนการสอนวิทยาศาสตร์และสิ่งแวดล้อมตามแนวคิดการศึกษาคณิตศาสตร์ที่มีเนื้อหาสิ่งแวดล้อมต่างๆ ระดับที่ 1 และระดับการเรียนรู้สิ่งแวดล้อมของนักเรียนระดับเด็กadam. (THE DEVELOPMENT OF AN ENVIRONMENTAL SCIENCE INSTRUCTIONAL MODEL BASED ON PLACE-BASED EDUCATION APPROACH TO PROMOTE SENSE OF PLACE AND ENVIRONMENTAL LITERACY OF LOWER SECONDARY SCHOOL STUDENTS) บ.ที่ ป.ศ.ศ.วิทยาลัย จังหวัดอุบลราชธานี ปี 2564.
The purposes of this study were to develop an environmental science instructional model based on place-based education approach and evaluate the quality of the developed instructional model on promoting sense of place and environmental literacy of lower secondary school students. The research procedure was divided into 2 phases; phase one developing the instructional model in Watphonamalyakwat School, Kohkred, Pakred District, Northaburi Province, which was the research site, then studied the research site context for using as background data and content for developing the instructional model, verifying the developed instructional model by experts and then tryout and refine the instructional model, and phase two implementing the developed instructional model with 23 ninth-grade students of Watphonamalyakwat School for 13 weeks. The quantitative research instruments were sense of place and environmental literacy tests, which were developed as parallel tests. The quantitative data were analyzed by using Paired Samples T-test for quality evaluation of the developed instructional model. Moreover, the students' projects and learning logs were analyzed by using content analysis for evaluating the development of sense of place and environmental literacy along the 6 steps of instructional processes.

The findings of this study were as follows:

1. The environmental science instructional model was developed based on the connection between the place-based education approach, environmental education for sustainable development, and environmental science instruction approach as basic idea. The developed instructional model was consisted of 5 components; (1) Principle of the instructional model which comprised of 4 principles that emphasized on use of local place context as student's learning experience resources, investigation of the local environmental problems, directed learning experiences on local environmental stewardship, and community cooperation; (2) Objective: the main two objectives were to promote sense of place, and environmental literacy; (3) Content: the integration of local environmental problems with the environmental science strands; (4) Steps of instructional processes: there were 6 steps; preparing students' basic skills, surveying local environmental problems, analyzing the context of local environmental problems, planning for local environmental stewardship, action on local environmental stewardship, and public presentation; (5) Evaluation: formative and summative evaluation using both quantitative and qualitative measures throughout the instructional process.

2. The effectiveness of the instructional model, it was found that;

2.1 Promoting sense of place: the subjects had the average score of place meaning and place attachment higher than before the experiment at .01 level of significance in all components and showed the highest development of place meaning and place attachment in the step of public presentation.

2.2 Promoting environmental literacy: the subjects had the average score of environmental knowledge, environmental skills, environmental attitudes, and environmental behaviors higher than before the experiment at .01 level of significance in all components and showed the highest development of environmental knowledge and skills in the step of action on local environmental stewardship, the highest development of environmental attitudes and behaviors in the step of public presentation.