Using a Cognitive Style-Based Learning Strategy to Improve Students' Environmental Knowledge and Scientific Literacy

Arif Sholahuddin
Associate Prof. Dr., Faculty of Education, Universitas Lambung Mangkurat, Banjarmasin, Indonesia, arif.*science.edu@ulm.ac.id**
Eko Susilowati
Dr. Faculty of Education Universitas Lambung Mangkurat Banjarmasin Indonesia, *titis_pfis@ulm.ac.id*
Binar Kurnia Prahani
Dr. Faculty of Mathematics and Science Universitas Negeri Surabaya Indonesia, *binarprahani@unesa.ac.id*
Erman Erman
Prof. Dr., Faculty of Mathematics and Science Universitas Negeri Surabaya Indonesia, *erman@unesa.ac.id*

Scientific literacy is the ability to explain phenomena and solve problems using scientific knowledge. Despite being an important factor in the scientific and technological advancement of society, students worldwide struggle to attain the skills necessary to demonstrate competency in scientific literacy. This study examines the capacity for a cognitive style-based learning strategy (CSBLS) to improve students' environmental knowledge and scientific literacy. 55 students from two Indonesian state junior high schools (SMPN) participated in the research; 30 students from SMPN 6, Banjarmasin and 25 students from SMPN 21, Banjarmasin. The CSBLS was applied during six classroom meetings over a three week period using a group pre-test and post-test on the topic of environmental pollution. The study concluded that the CSBLS was able to improve students' environmental knowledge and scientific literacy. In addition, the learning strategy supported students different cognitive styles (Field Independent/FI and Field Dependent/FD, although scaffolding was still needed for tasks that required more complex thinking such as scientific literacy, particularly for FD. This research indicates that a CSBLS has the potential to improve students' environmental knowledge and scientific literacy throughout the learning process.

Keywords: cognitive style, learning strategy, scientific literacy, environmental pollution, field independent, field dependent