

# MODEL OF REDUCTION MISCONCEPTION BASED ON ENCODING AND CONCEPT NETWORKING ABILITIES OF PRE-SERVICE PHYSICS TEACHER STUDENTS

by Yusman Wiyatmo 1, Dadan Rosana 2, and Lusila Andriani Purwastuti<sup>3</sup>

## ABSTRACT

The purpose of this study was to obtain a valid learning model of information processing based on encoding and concept networking abilities (IPB-ECNA) to reduce misconceptions and foster the creative attitude of pre-service physics teacher students, and to determine the effect of encoding ability and concept networking on reducing misconceptions and achieving creative attitudes of pre-service physics teacher students. The type of research was research and development (R&D) using a 4D model from Thiagarajan. The product developed was a model equipped with a model device in the form of modules and worksheets. The instrument used to collect data on misconception, encoding ability, and concept networking was a test. The creative attitude data were collected by a questionnaire. The subjects of this study were 75 students of physics education study program of Faculty of Mathematics and Natural Sciences of Yogyakarta States University. The direct, indirect, and total effects of encoding abilities, concept networking abilities, and creative attitude variables on the reduction of misconceptions were analyzed by structural equation model (SEM). From the results of the study, it can be concluded that the learning model of IPB-ECNA was appropriate to be used for reducing misconceptions and foster the creative attitude of pre-service physics teacher students. Encoding ability and concept networking had a direct effect on reducing misconceptions and creative attitudes. The effective contribution of encoding and concept networking abilities to reduce misconceptions and creative attitudes of pre-service physics teacher students were 19.63% and 32.87% respectively.

Kata Kunci: *encoding abilities, concept networking, misconceptions, creative attitude, IPB-ECNA*