

THE DETERMINATION OF COGNITIVE CONSTRUCTS AND MISCONCEPTIONS RELATED TO HEAT AND TEMPERATURE CONCEPTS OF SCIENCE TEACHER CANDIDATES WITH WORD ASSOCIATION TEST (WAT)

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Abstract

The concepts of heat and temperature have an important place within the sciences and they are confused as two concepts which lead to misleading and very mixed. For this reason, the prevention of misconceptions can be achieved by the successful implementation of concept teaching. Science are closely related to how they can explain the concepts of heat and temperature to their students in a clear and understandable way when they are teachers, as well as how they cognitively construct these concepts. For this reason, the aim of the research is to reveal the cognitive structures related to the heat and temperature concepts of the science teachers and to determine the misconceptions of the concepts. In the research conducted in the screening model, the word association test was used to determine the cognitive structures of the teacher candidates regarding the mentioned concepts. The research was conducted with 90 teacher candidates in the third and fourth year of Science Education Teaching Program of the Faculty of Education of a state university in the fall semester of 2017-2018 academic year. As a result of the research, the obtained words about the concepts were examined in detail and concept nets were formed in the direction of the cut points determined by considering the repeated words. According to the findings, it was determined that the science teacher candidates use the words of energy, temperature and calorie most about the concept of heat and use the words thermometer, celcius, degree in relation to the concept of temperature.

Keywords: WAT, heat, temperature, pre-service teachers.