

**DEVELOPMENT OF A SCIENCE LEARNING UNIT TO  
ENHANCE HIGH SCHOOL STUDENTS' UNDERSTANDING OF  
RAINBOW BASED ON PREDICT-OBSERVE-EXPLAIN  
APPROACH**



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ABSTRACT

Students find the subject of Physics tough and uninteresting due to abstract and complex content. Consequently, students' interest in and attitude towards physics is deteriorating all over the world, which is also blamed on the unacceptable quality of teaching. In order to address the aforementioned problems, this study says that the introduction of interesting topics in physics raises the interest and curiosity of the students thereby motivating students to continue studying physics. In addition, hands-on activities, along with a suitable learning cycle, help students to learn the concepts better. Therefore, in this study, the Predict-Observe-Explain (POE) learning cycle was used along with models for hands-on learning on interesting optical phenomena related to rainbow formation. This study was aimed at investigating students' conceptual understanding about the optical phenomenon of rainbow formation and investigating students' opinions on the developed learning unit. A conceptual understanding test along with a learning unit opinion survey questionnaire (LUOSQ) was used to investigate students' understanding of the concepts. The opinion of the students towards the learning unit was investigated using the LUOSQ items and students' interview responses. The participants of this study were 120 grade 11 science students from one district in Bhutan. The study found that the average score increased from 23.3% in the pre-test to 82.7% in the post-test with an overall gain of 59%. Moreover, the average mean of LUOSQ items was 4.71. These results indicate that there was significant improvement of the students' conceptual understanding of rainbow formation and the opinion of the students showed strong approval of the learning unit.

KEY WORDS: POE/ RAINBOW/PHYSICS EDUCATION/INDOOR RAINBOW MODEL/HANDS-ON LEARNING

132 pages