

THE DEVELOPMENT OF INNOVATIVE LEARNING MATERIAL WITH PROJECT ON THE TEACHING OF REDOX TITRATION

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ABSTRACT

The development of innovative learning material with project of redox titration is explained in this study. The study is aimed to provide an innovative learning material with project based learning to be used as learning facility to improve students competence in chemistry. Research procedures are consisted of preparation of complete and standard learning material with mini projects for redox titration topic of Analytical Chemistry, standardization of the developed learning material, and implementation of the innovative learning material in the class. The results has showed that an innovative learning material with project of redox titration topic has been developed as required in the components of appropriateness according to the Badan Nasional Standar Pendidikan (BNSP). Redox titration topic consisted of 5 sub subjects, they are: Redox Explanation, Redox Equation, Redox Titration Curves, Equivalence Point, End Point of Redox Titration and Indicator in Redox titration. There are some integration of the following relevant laboratory experiment, contextual application, the illustration, pictures and graph to support the redox titration materials, problems and examples, solving problems and sets of evaluation to make it easy to to use and be able to help the learner. Implementation of the projects provide independent and enjoyable learning. Sets of mini projects given in the learning materials are found to be effective to facilitate the learner to learn redox titration topic. The facility available in a learning package adequate to guide the student to learn chemistry independently and students centre learning style was achieved. Standardization of the learning material have been carried out by making questionnaire and the expert lecturers are agree with responses **3.84**, according to students with responses **3.54**, based on psychomotor questionnaire that is **93.75** and the responses of student respondents **89-94%**. The developed learning material with project along with the recovery target to be assigned in the sample motivate the students to do project seriously. The innovative learning material with project on the teaching of redox titration can use in university in teaching and learning process.

Keywords: Innovative learning, Project based learning, Analytical Chemistry