# Learning Module on Buffer Material with a CRT Approach to Solve Problem Topics in Jombang Typical Coffee Beer-Drink

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**ABSTRACT**

**Objective:** Learning with the CRT approach is suitable for realizing contextual learning in the Independent Curriculum. So, research was carried out to develop a PBL model learning module using a CRT approach that is ideal for application in teaching chemistry regarding buffer solutions. **Method:** The research carried out was of a qualitative descriptive type. Open module development uses the Research and Development (R&D) method. The research stages include definition, design, development, and dissemination. **Results:** The trial of the teaching application module was carried out at 3rd State Senior High School Jombang. The results show that the Learning module developed is suitable for learning Buffer material using the CRT approach, which is indicated by a validity score of 4 in the outstanding category and can complete 35 students with an average increase in learning outcomes in the N-Gain score in the medium category. **Novelty:** The novelty of this research lies in the CRT approach, which is essential to apply to the independent curriculum combined with the PBL learning model to train students to analyze a problem in a buffer material.

## INTRODUCTION

The current curriculum in Indonesia is the Merdeka curriculum with a new learning paradigm. Through quality education, students are taught to participate in building social life (Manurung & Zubir Moondra, 2023; Sulastry et al., 2023). Accuracy in choosing a learning model is one of the essential and crucial things for educators to plan so that learning can run smoothly (Dewi & Azizah, 2019; Oktaviani et al., 2020). The learning model is designed to realize learning objectives (Hidayah et al., 2021; Ramlah et al., 2023; Saragi & Dalimunthe, 2022). One of the learning models recommended to be applied to the Merdeka curriculum is Problem-Based Learning (Chusnah et al., 2020). This problem-based learning model allows students to solve problems in real situations through the concepts they already have, building their knowledge through learning that focuses on problem-solving (Herlina, 2020; Mardiansyah et al., 2022). The PBL learning model allows students to actively process learning through sequences of activities such as problem orientation, group organization in solving problems with educators' guidance, and presentations on problem-solving and evaluation (Rahmayanti et al., 2023; Zainal, 2022).

This sometimes does not correspond to the facts in the field, which rarely apply this learning model, but instead, learning that focuses on educators and only follows the learning flow in textbooks. The often-used learning does not facilitate students (Effendi & Iryani, 2023; Purwandari et al., 2022). To actively train their minds to understand essential competencies and does not foster students' curiosity about something (Silaban et al., 2021; Widyaningrum et al., 2023)

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