

# DEVELOPMENT OF LEARNING DEVICES ORIENTED ETHNOCIMIA TO IMPROVE CRITICAL THINKING ABILITY, SKILLS OF SCIENCE PROCESSES, AND SCIENTIFIC ATTITUDES

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## ABSTRACT

This study aims to produce ethnochemical-oriented learning devices that utilize local culture and wisdom to support research-based learning in basic chemistry courses. This type of research is Research and Development (R & D). This study adapted the Four-D development model (Thiagarajan, Semmel & Semmel, 1974), including defining, planning, developing, and disseminating. The research planning stage, namely formulating research objectives, designing the blueprint, developing hypothetical prototypes and designs. Product testing, namely validation, limited trials, extensive trials, and product revisions. Dissemination and socialization, namely the dissemination of products to basic chemistry lecturers, national and international journal publications, and mass product manufacturing. The subjects in this study involved three experts, namely chemistry learning experts, chemical content experts, and education evaluation experts. The research instrument used in this study is the learning device validation sheet. Analysis of the results of validation is done by converting quantitative data in the form of 4-point Likert scale into qualitative data in the form of criteria of validity and reliability. This study resulted in ethnochemical oriented learning devices in basic chemistry courses including: syllabus, lecture units, semester implementation plans, lecture contracts, student worksheets, critical thinking ability rubrics, science process skills observation sheets, and scientific attitude questionnaires. Based on expert judgment, learning devices have "very good" quality, have Aiken's validity coefficient ranging from 0.884 to 0.942, and have Cronbach's alpha reliability coefficient ranging from 0.716 to 0.825. These coefficients can be categorized into high and very high validity and reliability. Thus, the learning device developed has met the criteria of good validity and reliability.

Kata Kunci: *ethnochemistry, critical thinking skills, science process skills, learning tools, scientific attitudes*