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The Implementation of the Discovery Learning Model Using Higher Order Thinking Skills Booklet Media on Students' Critical Thinking Ability

Nurhikma Ramadhana[1*], Nur Qamariah[1], Hanandita Veda Saphira[2]
[1] Universitas Sulawesi Barat, Lutang Majene, Indonesia
[2] University of Wollongong, Wollongong, Australia

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ABSTRACT

Objectives: To implement and design learning models that incorporate appropriate instructional media, fostering critical thinking. Such an approach will facilitate the integration of three cognitive domains: knowing, applying, and reasoning. **Methods:** This study adopts a quasi-experimental design using a "true experimental design" with a post-test-only control group. The objective is to implement the Discovery Learning model and develop a Higher-Order Thinking Skills (HOTs) booklet to enhance students' critical thinking abilities. **Results:** The research findings indicate that the Discovery Learning model with HOTs booklet media significantly influences students' critical thinking skills in biology learning. The critical thinking aspect with the highest score is essential clarification, effectively fostered during the problem-orientation phase. This stage involves students formulating questions based on scenarios in their worksheets. **Novelty:** The novelty of this study lies in its integration of Discovery Learning with a hots booklet explicitly tailored to the Indonesian secondary school context. While previous studies have emphasized the individual impact of Discovery Learning or HOTs-based instructional tools, this research uniquely combines the two to create a synergistic approach that addresses the critical thinking gaps identified in Indonesian students.

INTRODUCTION

In the 21st century, students must develop critical thinking skills, considered essential learning outcomes. Achieving these outcomes is contingent upon implementing effective learning processes (Hidayat et al., 2024). However, several studies on secondary school students in Indonesia indicate that critical thinking skills still require significant improvement (Chairatunnisa et al., 2023; Chusni et al., 2022; Lestari et al., 2021; Suastrawan et al., 2021) These skills can be enhanced by applying practical and meaningful instructional models. Such models foster an environment where students can construct their knowledge based on real-life experiences. The instructional models that support this are Discovery Learning and the Higher Order Thinking Skills (HOTs) booklet (Suriano et al., 2025).

Discovery Learning is an instructional method in which students independently investigate, build upon prior experiences and knowledge, utilize intuition, imagination, and creativity, and seek new information to uncover facts, relationships, and truths (Aldalur & Perez, 2023). In this process, learning is not merely absorbing information but involves students actively seeking answers and solutions (Hoerudin, 2023; Pujiana et al., 2024). As educational expert Rusman asserts, Discovery Learning encourages individuals and groups to discover knowledge through hands-on experience.

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