USING A FOUR-TIER DIAGNOSTIC TEST TO ASSESS STUDENTS' MISCONCEPTION ABOUT THE CLASSIFICATION OF LIVING THINGS IN EAST BANDUNG REGION

RESEARCH PAPER

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Using a Four-Tier Diagnostic Test to Assess Students' Misconception about The Classification of Living Things in East Bandung Region

Oleh
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Sebuah skripsi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Sarjana Pendidikan pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam

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ABSTRACT

Understanding students' misconceptions is essential to improving science education, particularly in biological concepts such as the classification of living things. This study aimed to analyze junior high school students' conceptions in East Bandung using a four-tier diagnostic test. The instrument consisted of 11 validated multiple-choice items measuring students' answers, reasoning, and confidence to classify responses into scientific knowledge, misconceptions, false positives, false negatives, and lack of knowledge. A total of 557 eighth-grade students participated in this quantitative survey research. The findings revealed that the most frequent category was lack of knowledge (33.46%), followed by misconceptions (23.58%), scientific knowledge (21.71%), false negatives (11.18%), and false positives (10.09%). The highest misconception rates occurred in the sub-topic of biodiversity classification, especially regarding taxonomic hierarchy and identification keys. The instrument validity based on Aiken's V ranged from 0.4 to 1 with an average of 0.71, while item reliability was high (0.85–0.91). However, person reliability was low, indicating diverse individual comprehension. The study highlights the need for improved teaching strategies that incorporate inquiry-based learning and interactive discussions to minimize misconceptions and enhance conceptual understanding in science education.

Keywords: Classification of Living Things, Four-Tier Diagnostic Test, Misconception

MENGGUNAKAN UJI DIAGNOSTIK EMPAT TINGKAT UNTUK MENGANALISIS MISKONSEPSI SISWA TENTANG KLASIFIKASI MAKHLUK HIDUP DI KOTA BANDING TIMUR

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ABSTRAK

Pemahaman terhadap miskonsepsi siswa sangat penting dalam meningkatkan kualitas pembelajaran IPA, terutama pada topik biologi seperti klasifikasi makhluk hidup. Penelitian ini bertujuan untuk menganalisis konsepsi siswa SMP di wilayah Bandung Timur menggunakan tes diagnostik empat tingkat. Instrumen terdiri dari 11 soal pilihan ganda yang telah divalidasi, serta mengukur jawaban, alasan, dan tingkat keyakinan siswa untuk mengidentifikasi kategori pengetahuan ilmiah, miskonsepsi, positif palsu, negatif palsu, dan kurang pengetahuan. Penelitian ini melibatkan 557 siswa kelas VIII dengan pendekatan survei kuantitatif. Hasil penelitian menunjukkan bahwa kategori terbanyak adalah kurangnya pengetahuan (33,46%), diikuti oleh miskonsepsi (23,58%), pengetahuan ilmiah (21,71%), negatif palsu (11,18%), dan positif palsu (10,09%). Subtopik dengan miskonsepsi tertinggi ditemukan pada klasifikasi makhluk hidup yang beragam, terutama dalam memahami urutan taksonomi dan penggunaan kunci determinasi. Validitas instrumen berdasarkan koefisien Aiken berkisar antara 0,4–1 dengan rata-rata 0,71, dan reliabilitas item berkisar antara 0,85–0,91. Namun, reliabilitas perorangan tergolong rendah, mengindikasikan variasi pemahaman antar siswa. Penelitian ini menekankan pentingnya strategi pembelajaran berbasis inkuiri dan diskusi interaktif untuk mengurangi miskonsepsi dan meningkatkan pemahaman konseptual siswa dalam pembelajaran IPA.

Kata Kunci: Klasifikasi Makhluk Hidup, Miskonsepsi, Tes Diagnostik Empat Tingkat

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