

**USING A FOUR-TIER DIAGNOSTIC TEST TO ANALYZE  
THE MISCONCEPTIONS ABOUT THE DIGESTIVE SYSTEM  
IN JUNIOR HIGH SCHOOL STUDENTS**

**RESEARCH PAPER**

Submitted as Requirement to Obtain Degree of *Sarjana Pendidikan* in  
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**INTERNATIONAL PROGRAM ON SCIENCE EDUCATION  
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UNIVERSITAS PENDIDIKAN INDONESIA**

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# **USING A FOUR-TIER DIAGNOSTIC TEST TO ANALYZE THE MISCONCEPTIONS ABOUT THE DIGESTIVE SYSTEM IN JUNIOR HIGH SCHOOL STUDENTS**

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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**APPROVAL SHEET**

**USING A FOUR-TIER DIAGNOSTIC TEST TO ANALYZE THE  
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SCHOOL STUDENTS**

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## DECLARATION

I hereby declare that what I wrote in my thesis entitled **USING A FOUR-TIER DIAGNOSTIC TEST TO ANALYZE THE MISCONCEPTIONS ABOUT THE DIGESTIVE SYSTEM IN JUNIOR HIGH SCHOOL STUDENTS** is my work written independently. The use of quotations in this work has been written correctly based on all available sources. The research carried out in this thesis is original and has not been made available in any other form as a requirement for any degree, qualification, or qualification. By signing this statement, I acknowledge that I have read and understand the ethical policies relating to research and have complied with relevant guidelines throughout the research process.

Bandung, August 22<sup>nd</sup>, 2024

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## ABSTRACT

A student has different methods of learning and understanding a topic. Misunderstandings or errors in understanding concepts can change the way they interpret the same subject. Students contribute information, attitudes, abilities, and experiences, all influenced by their encounters with the world around them. The four-level diagnostic test has the following benefits: it can differentiate the level of confidence in the explanation and the level of confidence in the answer; This research aims to determine students' conceptions and misconceptions regarding the digestive system material, identify students' misconceptions more completely; this can determine which parts of a subject need strengthening, and the results can inform instructional design intended to reduce student misconceptions. The instrument was analyzed with the Aiken's V coefficient value for each test item ranging from 0.4 to 1, with an average value of 0.85 for all 28 questions at the first and third levels. The results of research using a four-level diagnostic test can be analyzed into five categories: Scientific Knowledge (SK), False Positive (FP), False Negative (FN), Misconceptions (M), and Lack of Knowledge (LK). The highest percentage in this study was lack of knowledge, namely 35%. Misunderstandings were surprisingly found to be around 16%, lower than previous studies. that students still have misconceptions about minerals and zinc, this shows the importance of overcoming misconceptions about concepts in learning. To overcome this problem, interviews were held with students who participated in this research who had listened to and understood the students' points of view so that they could find out the factors of student misconceptions.

**Keywords:** Four-Tier Diagnostic Test, Digestive System, Misconception

# MENGGUNAKAN UJI DIAGNOSTIK EMPAT TINGKAT UNTUK MENGANALISIS KESALAHAN MISKONSEPSI TENTANG SISTEM PENCERNAAN PADA SISWA SMP

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## ABSTRAK

Seorang siswa mempunyai metode belajar dan memahami suatu topik yang berbeda-beda. Kesalahpahaman atau kesalahan dalam memahami konsep dapat mengubah cara mereka menafsirkan subjek yang sama. Siswa menyumbangkan informasi, sikap, kemampuan, dan pengalamannya, semuanya dipengaruhi oleh pertemuan mereka dengan dunia di sekitar mereka. Tes diagnostik empat tingkat mempunyai manfaat sebagai berikut: dapat membedakan tingkat keyakinan terhadap penjelasan dan tingkat keyakinan terhadap jawaban; penelitian ini bertujuan untuk mengetahui konsepsi dan miskonsepsi siswa terhadap materi sistem pencernaan, mengidentifikasi miskonsepsi siswa secara lebih lengkap; hal ini dapat menentukan bagian mana dari suatu mata pelajaran yang perlu diperkuat, dan hasilnya dapat menginformasikan desain pembelajaran yang dimaksudkan untuk mengurangi miskonsepsi siswa. Instrumen dianalisis dengan nilai koefisien V Aiken untuk setiap butir tes yang berkisar antara 0,4 hingga 1, dengan nilai rata-rata 0,85 untuk seluruh 28 soal pada level pertama dan ketiga. Hasil penelitian dengan menggunakan tes diagnostik empat tingkat dapat dianalisis menjadi lima kategori: Pengetahuan Ilmiah (SK), Positif Palsu (FP), Negatif Palsu (FN), Miskonsepsi (M), dan Kurang Pengetahuan (LK). Persentase tertinggi pada penelitian ini adalah kurangnya pengetahuan yaitu sebesar 35%. Kesalahpahaman secara mengejutkan ditemukan sekitar 16%, lebih rendah dibandingkan penelitian sebelumnya. bahwa siswa masih menyimpan miskonsepsi tentang mineral dan zinc, hal ini menunjukkan pentingnya mengatasi miskonsepsi tentang konsep dalam pembelajaran. Untuk mengatasi permasalahan tersebut diadakan lah wawancara dengan siswa yang berpartisipasi dalam penelitian ini telah mendengarkan dan memahami sudut pandang siswa sehingga dapat mengetahui faktor miskonsepsi pada siswa.

**Kata Kunci:** Tes Diagnostik Empat Tingkat, Sistem Pencernaan, Miskonsepsi

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