

**PENGEMBANGAN TES DIAGNOSTIK *FOUR-TIER* UNTUK  
MENGIDENTIFIKASI MISKONSEPSI PESERTA DIDIK PADA  
MATERI GELOMBANG DAN OPTIK**

**TESIS**

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Magister  
Pendidikan pada bidang Pendidikan Ilmu Pengetahuan Alam



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PADA MATERI GELOMBANG DAN OPTIK**

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Sebuah Tesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Magister Pendidikan (M.Pd.) pada Program Studi Pendidikan Ilmu Pengetahuan Alam

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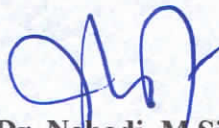
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## ABSTRAK

### **Andry S. Utama Putra (1706714). Pengembangan Tes Diagnostik *Four-Tier* Untuk Mengidentifikasi Miskonsepsi Pada Materi Gelombang dan Optik**

Penelitian ini bertujuan untuk mengembangkan tes diagnostik *four-tier* yang memenuhi syarat uji validitas, reliabilitas, daya pembeda, dan tingkat kesukaran sehingga dapat digunakan sebagai instrumen dalam mengidentifikasi miskonsepsi peserta didik pada materi gelombang dan optik. Jenis penelitian merupakan penelitian pengembangan yang terdiri dari lima tahapan yaitu (1) investigasi awal; (2) desain; (3) realisasi/ konstruksi; (4) evaluasi dan revisi; serta (5) implementasi. Penelitian dilaksanakan di tiga SMP yang berlokasi di Kecamatan Lembang, Bandung Barat, Jawa Barat. Subjek dalam penelitian ini adalah peserta didik SMP kelas VIII yang telah mempelajari materi gelombang dan optik. Analisis data yang digunakan yaitu analisis kuantitatif dengan melihat kualitas butir dan hasil implementasi tes diagnostik yang dikembangkan. Hasil penelitian menunjukkan bahwa tes diagnostik *four-tier* yang dikembangkan telah memenuhi kriteria valid dengan reliabilitas butir soal dalam kategori bagus sekali. Analisis implementasi tes juga memberikan informasi mengenai lima level konsepsi peserta didik yaitu *misconceptions*, *lack of knowledge*, *scientific conception*, *false positive*, dan *false negative* dari materi yang diujikan. Hasil implementasi tes diagnostik *four-tier* diperoleh sebanyak 9% peserta didik mengalami miskonsepsi pada materi gelombang dan 8% pada materi optik. Berdasarkan temuan tersebut dapat disimpulkan bahwa tes diagnostik *four-tier* yang dikembangkan telah memenuhi kriteria dan dinyatakan layak digunakan untuk mengidentifikasi miskonsepsi peserta didik pada materi gelombang dan optik.

**Kata Kunci:** *Tes diagnostik Four-Tier, Miskonsepsi, Gelombang dan Optik*

## ABSTRACT

### **Andry S. Utama Putra (1706714). Development of Four-Tier Diagnostic Tests to Identify Misconceptions in Wave and Optics Material**

This study aims to develop a four-tier diagnostic test that meets the test requirements for validity, reliability, differentiation, and degree of difficulty so that it can be used as an instrument to identify misconceptions in waves and optics materials. This type of research is development research which consists of five stages, namely (1) preliminary investigation; (2) design; (3) the realization/construction; (4) evaluation and revision; and (5) implementation. The research was conducted in three junior high schools which in Lembang District, West Bandung, West Java. The subjects in this study were class VIII junior high school students who had studied wave and optics material. Analysis of the data used is quantitative analysis by looking at the quality of the items and the results of the implementation of the developed diagnostic tests. The results showed that the four-tier diagnostic test developed had met the valid criteria with the reliability of the items in the excellent category. Analysis of the implementation of the test also provides information about five levels of student conception, namely misconceptions, lack of knowledge, scientific conception, false positives, and false negatives from the material being tested. The results of the implementation of the four-tier diagnostic test showed that 9% of students experienced misconceptions in wave material and 8% in optics material. Based on these findings it can be concluded that the four-tier diagnostic test developed has met the criteria and is declared feasible to be used to identify students' misconceptions in wave and optics material.

**Keywords:** *Four-tier Diagnostic Test, Misconceptions, Waves and Optics*

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