

ABSTRAK

Nadia Sinta Devi. 2026. Pengembangan Tes Kognitif Level *Higher Order Thinking Skills* (HOTS) pada Materi Bioteknologi Kelas X Berbasis Kearifan Lokal Madiun. Skripsi. Program Studi Pendidikan Biologi, FKIP, Universitas PGRI Madiun. Pembimbing (I) Sri Utami, S.Pd., M.Pd., (II) Joko Widiyanto, S.Pd., M.Pd.

Kemampuan berpikir tingkat tinggi *Higher Order Thinking Skills* (HOTS) merupakan kompetensi penting abad ke-21 yang perlu diukur melalui instrumen evaluasi berkualitas. Namun, instrumen penilaian di sekolah masih didominasi soal berorientasi *Lower Order Thinking Skills* (LOTS) dan belum mengintegrasikan kearifan lokal sebagai stimulus kontekstual. Penelitian ini bertujuan mengembangkan instrumen tes kognitif HOTS berbasis kearifan lokal Madiun pada materi Bioteknologi kelas X, menguji kelayakannya, serta mengetahui respons guru dan peserta didik. Penelitian ini merupakan penelitian dan pengembangan (*Research and Development*) menggunakan model ADDIE yang meliputi tahap *Analysis, Design, Development, Implementation, dan Evaluation*. Produk yang dikembangkan berupa 20 soal pilihan ganda beralasan dan 10 soal uraian pada level kognitif C4, C5, dan C6 dengan konteks brem, bluder, madu mongso, tempe, dan tape ketan daun jambu. Instrumen divalidasi oleh ahli materi, ahli evaluasi pembelajaran, dan ahli bahasa, kemudian diujicobakan kepada 30 peserta didik kelas X SMA. Hasil penelitian menunjukkan validasi ahli materi sebesar 96%, ahli evaluasi pembelajaran 92%, dan ahli bahasa 89%, dengan rata-rata 92% berkategori sangat layak. Seluruh butir soal pilihan ganda beralasan dinyatakan valid (r hitung 0,361-0,592; r tabel = 0,361) dan memiliki reliabilitas sangat tinggi (Cronbach's Alpha = 0,815). Tingkat kesukaran terdiri atas 10 butir mudah dan 10 butir sedang, sedangkan daya pembeda menunjukkan 11 butir berkategori baik dan 9 butir berkategori cukup. Respons guru memperoleh persentase 98% (sangat baik) dan peserta didik 80% (sangat baik). Instrumen yang dikembangkan memenuhi kriteria valid, reliabel, dan layak digunakan untuk mengukur kemampuan HOTS peserta didik pada materi Bioteknologi.

Kata kunci: HOTS, instrumen tes kognitif, Bioteknologi, kearifan lokal Madiun, ADDIE.

ABSTRACT

Nadia Sinta Devi. 2026. Development of Higher Order Thinking Skills (HOTS) Level Cognitive Tests on Biotechnology Material for 10th Grade Based on Local Wisdom of Madiun. Thesis. Biology Education Study Program, FKIP, PGRI Madiun University. Supervisors (I) Sri Utami, S.Pd., M.Pd., (II) Joko Widiyanto, S.Pd., M.Pd.

Higher Order Thinking Skills (HOTS) are an important 21st-century competency that need to be measured thru quality evaluation instruments. However, assessment instruments in schools are still dominated by questions oriented toward *Lower Order Thinking Skills* (LOTS) and have not yet integrated local wisdom as contextual stimuli. This research aims to develop a HOTS cognitive test instrument based on local wisdom from Madiun for the 10th-grade Biotechnology subject, test its feasibility, and understand the responses of teachers and students. This research is a Research and Development study using the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. The developed product consists of 20 multiple-choice questions with reasoning and 10 essay questions at the cognitive levels C4, C5, and C6, with the context of brem, bluder, madu mongso, tempe, and tape ketan daun jambu. The instrument was validated by subject matter experts, learning evaluation experts, and language experts, and then tested on 30 tenth-grade high school students. The research results showed validation by subject matter experts at 96%, learning evaluation experts at 92%, and language experts at 89%, with an average of 92% categorized as very feasible. All the reasoning-based multiple-choice items were declared valid (r calculated 0.361-0.592; r table = 0.361) and had very high reliability (Cronbach's Alpha = 0.815). The difficulty level consists of 10 easy items and 10 medium items, while the discrimination index shows 11 items categorized as good and 9 items categorized as fair. The teachers' response received a percentage of 98% (very good) and the students' response 80% (very good). The developed instrument meets the criteria of being valid, reliable, and suitable for measuring students' HOTS abilities in Biotechnology material.

Keywords: HOTS, cognitive test instrument, Biotechnology, local wisdom of Madiun, ADDIE.