

Putri Ayu Khasanah. 2022. *Hubungan Kemampuan Berpikir Logis Terhadap Kemampuan Representasi Siswa Pada Materi Getaran, Gelombang, dan Bunyi*. Skripsi, Program Studi Pendidikan Ilmu Pengetahuan Alam, Jurusan Ilmu Pendidikan, Fakultas Ilmu Pendidikan, Universitas Trunojoyo Madura. Pembimbing: Ana Yuniasti Retno W, S.Pd., M.Pd.

## ABSTRAK

Penelitian ini bertujuan untuk mengetahui tingkat kemampuan berpikir logis dan kemampuan representasi siswa serta hubungan kemampuan berpikir logis terhadap kemampuan representasi siswa pada materi getaran, gelombang, dan bunyi. Penelitian ini merupakan jenis penelitian korelasional tipe survei, dengan menggunakan metode deskriptif kuantitatif, dilaksanakan di SMPN 1 Pacet dengan populasi seluruh siswa kelas VIII tahun ajaran 2021/2022. Teknik pengambilan sampel menggunakan *probability sampling* dengan teknik *purposive sampling*. Sampel penelitian sebanyak 92 siswa. Pengumpulan data menggunakan dua tes yaitu TOLT dan tes kemampuan representasi siswa, dan dokumentasi. Hasil dari penelitian ini yaitu: 1) tingkat kemampuan berpikir logis siswa tipe penalaran proporsional diperoleh persentase 25%, pengontrolan variabel 13%, penalaran probabilistik 18,5%, penalaran korelasional 24,5%, penalaran kombinatorial 63,6% sedangkan pada tahap perkembangan intelektual diperoleh nilai persentase pada tahap operasional formal 25%, tahap transisional 53,26%, tahap operasional konkrit 21,73%, sehingga siswa cenderung pada tipe kombinatorial dan pada tahap transisional 2) tingkat kemampuan representasi kategori tinggi diperoleh nilai 10,86%; kategori sedang 61,95%; kategori rendah 27,17% serta kemampuan representasi siswa diperoleh persentase nilai rata-rata pada masing-masing indikator yaitu tipe representasi gambar 80,27%, tipe representasi verbal 49,13% sedangkan tipe representasi simbolik 52,11%, sehingga disimpulkan siswa berada pada kategori sedang dan cenderung memiliki tipe representasi gambar 3) Ada hubungan yang kekuatannya rendah dan arah hubungan positif antara kemampuan berpikir logis terhadap kemampuan representasi siswa SMPN 1 Pacet pada materi getaran, gelombang dan bunyi dibuktikan dengan nilai sig.  $0,016 < 0,05$  yang artinya ada hubungan dan nilai hasil uji korelasi spearman sebesar  $0,251 < 0,05$  yang berarti kekuatan hubungan rendah serta bernilai positif yang memiliki arti hubungannya searah.

**Kata Kunci:** Kemampuan Berpikir Logis, Kemampuan Representasi

Putri Ayu Khasanah. 2022. *The Relationship of Logical Thinking Ability to Students' Representation Ability on Vibration, Waves, and Sound Materials*. Thesis, Natural Science Education Study Program, Department of Education, Faculty of Education, Trunojoyo University Madura. Supervisor: Ana Yuniasti Retno W, S.Pd., M.Pd.

### ABSTRACT

This study aims to determine the level of students' logical thinking and representational abilities and the relationship between logical thinking abilities and students' representational abilities on vibration, waves, and sounds. This research is a survey type correlational research, using a quantitative descriptive method, carried out at SMPN 1 Pacet with a population of all eighth grade students in the 2021/2022 academic year. The sampling technique used is *probability sampling with purposive sampling technique*. The research sample was 92 students. Data collection uses two tests, namely TOLT and students' representation ability tests, and documentation. The results of this study are: 1) the level of logical thinking ability of students with proportional reasoning type is 25%, variable control is 13%, probabilistic reasoning is 18.5%, correlational reasoning is 24.5%, combinatorial reasoning is 63.6% while at the developmental stage intellectually, the percentage score at the formal operational stage was 25%, the transitional stage was 53.26%, the concrete operational stage was 21.73%, 2) the level of representation ability in the high category obtained a value of 10.86%; medium category 61.95%; low category 27.17% and students' representation ability obtained the percentage of the average value on each indicator, namely the type of image representation 80.27%, the type of verbal representation 49.13% while the type of symbolic representation is 52.11%, 3) There is a relationship that has a low strength and a positive direction between the ability to think logically and the ability to represent students at SMPN 1 Pacet on vibration, waves and sound as evidenced by the value of sig. 0.016 < 0.05 which means there is a relationship and the value of the spearman correlation test result is 0.251 < 0.05 which means the strength of the relationship is low and has a positive value which means the relationship is unidirectional.

**Keywords: Logical Thinking Ability, Representation Ability**