PENINGKATAN KEMAMPUAN KOMUNIKASI MATEMATIS SISWA SMP DENGAN MODEL *PROBLEM-BASED LEARNING* BERBANTUAN *ARTIFICIAL INTELLIGENCE* DITINJAU DARI *ADVERSITY QUOTIENT*

TESIS

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FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM

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

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ABSTRAK

Yosy Candraningsih (2025). Peningkatan Kemampuan Komunikasi Matematis Siswa SMP dengan Model *Problem-Based Learning* Berbantuan *Artificial Intelligence* Ditinjau dari *Adversity Quotient*.

Penelitian ini mengkaji tentang pencapaian dan peningkatan kemampuan komunikasi matematis antara siswa yang memperoleh model *Problem-Based Learing* berbantuan *Artificial Intelligence* dan siswa yang memperoleh model *Problem-Based Learing* tanpa bantuan *Artificial Intelligence* ditinjau dari *Adversity Quotient*. Penelitian ini merupakan penelitian *quasi experimental design* dengan *pretest-posttest control group*. Populasi dalam penelitian ini merupakan siswa kelas VIII di salah satu SMP Negeri di Kabupaten Bogor. Sampel penelitian dipilih dengan teknik *purposive sampling* yang hasilnya diperoleh kelas VIII.3 sebagai kelas eksperimen dan kelas VIII.2 sebagai kelas kontrol. Teknik analisis data yang digunakan berupa uji-t dua sampel independent untuk menguji nilai *pretest*, uji ANOVA dua jalur dan uji *post hoc* untuk menguji nilai *posttest* dan nilai gain ternormalisasi. Hasil penelitian menunjukkan bahwa: (1) terdapat perbedaan pencapaian kemampuan komunikasi matematis antara siswa yang memperoleh model *Problem-based Learning* berbantuan *Artificial Intelligence* dibandingkan dengan siswa yang memperoleh model *Problem-based Learning* tanpa bantuan *Artificial Intelligence*; (2) terdapat perbedaan pencapaian kemampuan komunikasi matematis antara siswa dengan kategori *Adversity Quotient quitters-campers*, *campers*, dan *campers-climbers*; (3) tidak terdapat pengaruh interaksi antara faktor model pembelajaran dan faktor *Adversity Quotient* terhadap pencapaian kemampuan komunikasi matematis siswa; (4) terdapat perbedaan peningkatan kemampuan komunikasi matematis antara siswa yang memperoleh model *Problem-based Learning* berbantuan *Artificial Intelligence* dibandingkan dengan siswa yang memperoleh model *Problem-based Learning* tanpa bantuan *Artificial Intelligence*; (5) terdapat perbedaan peningkatan kemampuan komunikasi matematis antara siswa dengan kategori *Adversity Quotient quitters-campers*, *campers*, dan *campers-climbers*); (6) tidak terdapat pengaruh interaksi antara faktor model pembelajaran dan faktor *Adversity Quotient* terhadap peningkatan kemampuan komunikasi matematis siswa; (7) siswa pada kelas PBL-AI menunjukkan rata-rata pencapaian dan peningkatan kemampuan komunikasi matematis yang lebih tinggi dibandingkan kelas PBL-TBAI, dengan kecenderungan hasil terbaik pada siswa dengan *Adversity Quotient* kategori *Campers–Climbers*.

Kata kunci: *Adversity Quotient*, *Artificial Intelligence*, Kemampuan Komunikasi Matematis, Model *Problem-Based Learning*.

ABSTRACT

Yosy Candraningsih (2025). Improving Students' Mathematical Communication Skills through AI-Assisted Problem-Based Learning Based on Adversity Quotient.

This study investigates the effects of Artificial Intelligence-assisted Problem-Based Learning (AI-PBL) on junior high school students' mathematical communication skills, viewed from the perspective of Adversity Quotient (AQ). A quasi-experimental design with a pretest-posttest control group was employed. The participants were eighth-grade students from a public junior high school in Bogor Regency, Indonesia. Samples were selected using purposive sampling, with class VIII.3 assigned as the experimental group and class VIII.2 as the control group. Data were analyzed using an independent samples t-test for pretest results, two-way ANOVA, and post hoc tests for posttest and normalized gain scores. The findings reveal that: (1) there is a significant difference in the achievement of mathematical communication skills between students who received Artificial Intelligence-assisted Problem-Based Learning and those who received Problem-Based Learning without Artificial Intelligence; (2) there is a significant difference in the achievement of mathematical communication skills among students with different Adversity Quotient categories (quitters-campers, campers, and campers-climbers); (3) there is no significant interaction effect between learning model and Adversity Quotient on students' mathematical communication achievement; (4) there is a significant difference in the improvement of mathematical communication skills between students who received Artificial Intelligence-assisted Problem-Based Learning and those who received Problem-Based Learning without Artificial Intelligence; (5) there is a significant difference in the improvement of mathematical communication skills among students with different Adversity Quotient categories (quitters-campers, campers, and campers-climbers); and (6) there is no significant interaction effect between learning model and Adversity Quotient on the improvement of students' mathematical communication skills; (7) students in the PBL-AI class demonstrated higher average achievement and improvement in mathematical communication skills compared to those in the PBL-TBAI class, with the best results shown by students in the Campers–Climbers Adversity Quotient category.

Keyword: Adversity Quotient, Artificial Intelligence, Mathematical Communication Skills, Problem-Based Learning.

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