

ABSTRAK

Bayu Apriliansyah Prasetya. (2026). Pengaruh Model *Problem-Centered Learning* Berbantuan Geogebra Terhadap Kemampuan Komunikasi Matematis dan *Self-Efficacy* Murid SMA.

Kemampuan komunikasi matematika sangat penting dimiliki oleh murid, namun kenyataannya kemampuan komunikasi pada murid masing tergolong rendah. Penelitian ini bertujuan untuk: (1) mengetahui apakah model *Problem-Centered Learning* berbantuan Geogebra berpengaruh pada peningkatan kemampuan komunikasi matematis murid SMA daripada model *Problem-Based Learning*; (2) mengetahui apakah model model *Problem-Centered Learning* berbantuan Geogebra berpengaruh pada peningkatan kemampuan *self-efficacy* murid SMA daripada model *Problem-Based Learning*; (3) mengetahui apakah terdapat korelasi positif antara kemampuan komunikasi matematis dengan *self-efficacy* murid SMA yang memperoleh model *Problem-Centered Learning* berbantuan Geogebra; (4) mendeskripsikan efektivitas model *Problem-Centered Learning* berbantuan Geogebra terhadap kemampuan komunikasi matematis; (5) mendeskripsikan efektivitas model *Problem-Centered Learning* berbantuan Geogebra terhadap kemampuan *self-efficacy*. Metode penelitian ini adalah kuasi eksperimen dengan desain penelitian *non-equivalent control group design*. Populasi dalam penelitian ini adalah seluruh murid kelas XI SMA Negeri 1 Nagreg. Adapun sampel penelitian adalah murid kelas XI-8 sebagai kelas eksperimen yang mendapatkan model *Problem-Centered Learning* berbantuan Geogebra dan kelas XI-4 sebagai kelas kontrol yang mendapatkan model *Problem-Based Learning*. Instrumen yang digunakan dalam penelitian ini soal uraian tes kemampuan komunikasi matematis dan pernyataan angket *self-efficacy*. Hasil penelitian menunjukkan bahwa: (1) model *Problem-Centered Learning* berbantuan Gogebra memiliki pengaruh terhadap peningkatan kemampuan komunikasi matematis murid daripada model *Problem-Based Learning*; (2) model *Problem-Centered Learning* berbantuan Geogebra tidak memiliki pengaruh terhadap peningkatan kemampuan *self-efficacy* murid daripada model *Problem-Based Learning*; (3) terdapat korelasi positif antara kemampuan komunikasi matematis dan *self-efficacy* murid yang memperoleh model *Problem Centered Learning* berbantuan Geogebra; (4) model *Problem-Centered Learning* berbantuan Geogebra memiliki efek yang sangat besar terhadap kemampuan komunikasi matematis; (5) model *Problem-Centered Learning* berbantuan Geogebra memiliki efek yang sangat kecil terhadap kemampuan *self-efficacy*.

Kata kunci: *Problem Centered Learning*, komunikasi matematis, *self-efficacy*, Geogebra

ABSTRACT

Bayu Apriliansyah Prasetya. (2026). *The Effect of the Geogebra-Assisted Problem-Centered Learning Model on High School Students' Mathematical Communication Skills and Self-Efficacy.*

Mathematical communication skills are essential for students, but in reality, students' communication skills remain relatively low. This study aims to: (1) determine whether the Geogebra-Assisted Problem-Centered Learning Model is more effective in improving high school students' mathematical communication skills than the Problem-Based Learning model; (2) determine whether the Geogebra-Assisted Problem-Centered Learning Model is more effective in improving high school students' self-efficacy than the Problem-Based Learning model; (3) to determine whether there is a positive correlation between mathematical communication skills and self-efficacy among high school students who were taught using the Geogebra-Assisted Problem-Centered Learning Model; (4) to describe the effectiveness of the Geogebra-Assisted Problem-Centered Learning Model on mathematical communication skills; (5) to describe the effectiveness of the Geogebra-Assisted Problem-Centered Learning Model on self-efficacy. The research method used in this study was a quasi-experimental design with a non-equivalent control group. The population on this study consisted of all 11th-grade students at Nagreg State High School 1. The research sample comprised Class 11-8, the experimental class that received the Geogebra-Assisted Problem-Centered Learning Model, and Class 11-4 the control class that received the Problem-Based Learning model. The instruments used in this study were an essay-type test of mathematical communication skills and a self-efficacy questionnaire. The result of the study indicates that: (1) the Problem-Centered Learning model supported by Geogebra has greater effect on improving students' mathematical communication skill than the Problem-Based Learning; (2) the Problem-Centered Learning model supported by Geogebra had no greater effect on improving students' self-efficacy than the Problem-Based Learning; (3) there was a positive correlation between mathematical communication and self-efficacy among students who received the Problem-Centered Learning model supported by Geogebra; (4) the Problem-Centered Learning model supported by Geogebra had very large effect on mathematical communication skills; (5) the Problem-Centered Learning model supported by Geogebra had very small effect on students' self-efficacy.

Keywords: *Problem-Centered Learning, mathematical communication, self-efficacy, Geogebra*

RINGKESAN

Bayu Apriliansyah Prasetya. (2026). *Pengaruh Modél Problem-Centered Learning nu Dibantu ku Geogebra kana Kamampuhan Komunikasi Matematika jeung Self-efficacy Murid SMA*.

Kamampuh komunikasi matematika kacida pentingna dipiboga ku murid, nanging kanyataanna kamampuh komunikasi dina murid masih kagolong rendah. Ieu panalungtikan miboga tujuan pikeun: (1) terang naha modél Problem-Centered Learning dibaturan ku Geogebra mangaruhan kana kanaékan kamampuh komunikasi matematis murid SMA tibatan modél Problem Based Learning; (2) terang naha modél Problem-Centered Learning dibaturan ku Geogebra mangaruhan kana kanaékan kamampuh self-efficacy murid SMA tibatan modél Problem Based Learning; (3) terang naha aya korélasi positif antara kamampuh komunikasi matematis sareng self-efficacy murid SMA anu kenging modél Problem-Centered Learning dibaturan ku Geogebra; (4) ngadéskripsikeun éféktivitas modél Problem Centered Learning dibaturan ku Geogebra kana kamampuh komunikasi matematis; (5) ngadéskripsikeun éféktivitas modél Problem-Centered Learning dibaturan ku Geogebra kana kamampuh self-efficacy. Métode ieu panalungtikan nyaéta kuasi ékspérimén kalayan desain panalungtikan non-equivalent control group design. Populasi dina ieu panalungtikan nyaéta sakumna murid kelas XI SMA Negeri 1 Nagreg. Samentawis éta, sampel panalungtikanna nyaéta murid kelas XI-8 salaku kelas ékspérimén anu kenging modél Problem-Centered Learning dibaturan ku Geogebra jeung kelas XI-4 salaku kelas kontrol anu kenging modél Problem-Based Learning. Instrumén anu digunakeun dina ieu panalungtikan nyaéta soal uraian tés kamampuh komunikasi matematis jeung pernyataan angkét self-efficacy. Hasil panalungtikan némbongkeun yén: (1) modél Problem-Centered Learning dibaturan ku Geogebra miboga pangaruh kana kanaékan kamampuh komunikasi matematis murid tibatan modél Problem-Based Learning; (2) modél Problem-Centered Learning dibaturan ku Geogebra teu miboga pangaruh kana kanaékan kamampuh self-efficacy murid tibatan modél Problem-Based Learning; (3) aya korélasi positif antara kamampuh komunikasi matematis sareng self-efficacy murid anu kenging modél Problem-Centered Learning dibaturan ku Geogebra; (4) modél Problem-Centered Learning dibaturan ku Geogebra miboga éfék anu kacida gedéna kana kamampuh komunikasi matematis; (5) modél Problem-Centered Learning dibaturan ku Geogebra miboga éfék anu kacida leutikna kana kamampuh self-efficacy.

Kecap Konci: *Problem Centered Learning*, komunikasi matematis, *self-efficacy*, Geogebra