ABSTRAK

MUJIBURRAHMAN: Pengembangan *Hypothetical Learning Trajectory* (HLT) Berbasis *Problem Based Learning* (PBL) Untuk Meningkatkan Kemampuan Pemecahan Masalah Matematis Siswa. **Program Studi Pendidikan Matematika FKIP Universitas Malikussaleh, 2026.**

Penelitian ini bertujuan untuk mengetahui kevalidan, kepraktisan, dan keefektifan *Hypothetical Learning Trajectory* (HLT) berbasis *Problem Based Learning* (PBL) untuk meningkatkan kemampuan pemecahan masalah matematis siswa pada materi gradien garis lurus. Jenis penelitian ini adalah *design research* dengan model Gravemeijer dan Cobb yang terdiri atas tiga tahap, yaitu *preparing for the experiment*, *design experiment*, dan *retrospective analysis*. Subjek penelitian ini terdiri atas 9 siswa pada tahap *pilot experiment* dan 26 siswa kelas VIII-2 SMP Negeri 5 Lhokseumawe pada tahap *teaching experiment*. Produk yang dikembangkan berupa HLT, modul ajar, dan Lembar Kerja Peserta Didik (LKPD). Teknik pengumpulan data menggunakan lembar validasi ahli, angket respons guru dan siswa, lembar observasi, serta instrumen tes kemampuan pemecahan masalah matematis berupa *pretest* dan *posttest*. Teknik analisis data meliputi analisis kevalidan, kepraktisan, dan keefektifan produk yang dikembangkan. Hasil penelitian menunjukkan bahwa: (1) berdasarkan penilaian oleh ahli materi diperoleh persentase sebesar 96,67% dengan kriteria sangat valid, (2) berdasarkan penilaian oleh ahli media diperoleh persentase sebesar 86,67% dengan kriteria sangat valid, (3) berdasarkan angket respons siswa diperoleh persentase sebesar 81,71% pada tahap *pilot experiment* dan 85,44% pada tahap *teaching experiment*, sedangkan respons guru terhadap HLT memperoleh persentase sebesar 91,76% dengan kriteria sangat praktis, dan (4) berdasarkan hasil tes kemampuan pemecahan masalah matematis, sebanyak 18 dari 26 siswa mencapai ketuntasan belajar dengan persentase sebesar 69,23%, serta diperoleh rata-rata *N-Gain* sebesar 0,64 dengan kategori sedang. Berdasarkan hasil penelitian tersebut, HLT berbasis PBL yang dikembangkan memenuhi kriteria sangat valid, sangat praktis, dan efektif untuk mendukung peningkatan kemampuan pemecahan masalah matematis siswa pada materi gradien garis lurus.

Kata kunci: *Hypothetical Learning Trajectory*, *Problem Based Learning*, kemampuan pemecahan masalah matematis, gradien garis lurus.

ABSTRACT

MUJIBURRAHMAN: Development of *Hypothetical Learning Trajectory* (HLT) Based on *Problem Based Learning* (PBL) to Improve Students' Mathematical Problem-Solving Skills. **Mathematics Education Study Program, FKIP University of Malikussaleh, 2026.**

This study aims to determine the validity, practicality, and effectiveness of *Hypothetical Learning Trajectory* (HLT) based on *Problem Based Learning* (PBL) to improve students' mathematical problem-solving ability on straight-line gradient materials. This type of research is *design research* with the Gravemeijer and Cobb model which consists of three stages, namely *preparing for the experiment*, *design experiment*, and *retrospective analysis*. The subjects of this study consisted of 9 students at the *pilot experiment stage* and 26 students in grades VIII-2 of SMP Negeri 5 Lhokseumawe at the *teaching experiment stage*. The products developed were in the form of HLT, teaching modules, and Student Worksheets (LKPD). The data collection technique used expert validation sheets, teacher and student response questionnaires, observation sheets, and mathematical problem-solving ability test instruments in the form of *pretest* and *posttest*. Data analysis techniques included analysis of the validity, practicality, and effectiveness of the developed products. The results of the study showed that: (1) based on the assessment by material experts, a percentage of 96.67% was obtained with very valid criteria, (2) based on the assessment by media experts, a percentage of 86.67% was obtained with very valid criteria, (3) based on the student response questionnaire obtained a percentage of 81.71% at the *pilot experiment* stage and 85.44% at the *teaching experiment stage*, while the teacher's response to HLT obtained a percentage of 91.76% with very practical criteria, and (4) based on the results of the mathematical problem-solving ability test, as many as 18 out of 26 students achieved learning completeness with a percentage of 69.23%, and obtained an average *N-Gain* of 0.64 with the medium category. Based on the results of the study, the PBL-based HLT developed meets the criteria of being very valid, very practical, and effective to support the improvement of students' mathematical problem-solving skills in straight line gradient materials.

Keywords: *Hypothetical Learning Trajectory*, *Problem Based Learning*, mathematical problem-solving ability, straight line gradient