PENGARUH MODEL *PROBLEM-BASED LEARNING* BERBANTUAN DAN TIDAK BERBANTUAN TEKNOLOGI TERHADAP KEMAMPUAN BERPIKIR TINGKAT TINGGI MATEMATIS SISWA: STUDI META-ANALISIS

Tesis

Disusun untuk memenuhi sebagian syarat untuk memperoleh gelar
Magister Pendidikan Matematika

Oleh:

Febi Tasya Ramadhanti

NIM. 2003197

PROGRAM STUDI PENDIDIKAN MATEMATIKA
FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM
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Oleh:
Febi Tasya Ramadhanti

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Sebuah Tesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Magister Pendidikan (M.Pd.) pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam, Universitas Pendidikan Indonesia

LEMBAR PENGESAHAN

FEBI TASYA RAMADHANTI

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disetujui dan disahkan oleh pembimbing dan penguji:

Pembimbing I	Pembimbing II
Dr. H. Dadang Juandi, M. Si.	**Dr. Jarnawi Afgani Dahlan, M. Kes.**
NIP. 196401171992021001	**NIP. 196805111991011001**

Penguji I	Penguji II
Dr. Dadan Dasari, M.Si.	**Dr. H. Cece Kustiawan, M.Si.**
NIP. 196407171991021001	**NIP. 196612131992031001**

Mengetahui,

Ketua Program Studi Magister Pendidikan Matematika

Dr. H. Dadang Juandi, M. Si.

NIP. 196401171992021001

ABSTRAK

Febi Tasya Ramadhanti, (2022) Pengaruh Model *Problem-Based Learning* Berbantuan dan Tidak Berbantuan Teknologi Terhadap Kemampuan Berpikir Tingkat Tinggi Matematis Siswa: Studi Meta-Analisis.

Sampai saat ini telah banyak studi literatur mengenai pembelajaran berbasis masalah (PBL) terhadap kemampuan matematika siswa. Namun, studi-studi sebelumnya belum mengkaji pengaruh penggunaan teknologi dalam mengimplementasikan PBL yang berfokus terhadap kemampuan berpikir tingkat tinggi (HOTS) matematis. Penelitian ini bertujuan untuk meringkas, mengestimasi, dan mengevaluasi pengaruh dari penerapan model pembelajaran PBL berbantuan teknologi dan tidak berbantuan teknologi pada kemampuan berpikir tingkat tinggi matematis siswa, meliputi kemampuan berpikir kritis, kreatif, pemecahan masalah, dan penalaran matematis ditinjau berdasarkan karakteristik studi tahun studi, jenjang pendidikan, ukuran sampel, demografi siswa, dan indikator HOTS. Teknik meta-analisis digunakan untuk menganalisis data 133 studi primer yang telah memenuhi kriteris inklusi dengan bantuan aplikasi *Comprehensive Meta-Analysis* Versi 3.0. Temuan penelitian menyatakan bahwa secara keseluruhan pengaruh implementasi PBL berpengaruh positif terhadap HOTS matematis siswa dan lebih baik efektivitasnya dibandingkan pembelajaran konvensional, dengan ukuran efek sebesar 0,905 yang tergolong kategori efek tinggi. Selain itu, tidak terdapat perbedaan HOTS matematis yang signifikan antara siswa yang diberi PBL berbantuan teknologi dan siswa yang diberi PBL tidak berbantuan teknologi. Karakteristik studi ukuran sampel dan demografis siswa merupakan faktor yang menyebabkan heterogenitas HOTS matematis siswa. Sebaliknya, heterogenitas ukuran efek HOTS matematis siswa tidak dipengaruhi oleh karakteristik indikator kemampuan berpikir tingkat tinggi matematis, tahun studi, dan jenjang pendidikan. Dengan demikian, temuan ini merekomendasikan agar guru dan dosen matematika memilih untuk menerapkan PBL sebagai salah satu solusi terbaik guna meningkatkan HOTS dalam pembelajaran matematika, serta perlu mempertimbangkan lokasi dimana siswa belajar dan sebaiknya menerapkan PBL pada kelas dengan kapasitas siswa tidak lebih dari 30 partisipan.

Kata kunci: Kemampuan Berpikir Tingkat Tinggi Matematis, *Problem-Based Learning*, Teknologi, Meta-analisis**.**

ABSTRACT

Febi Tasya Ramadhanti, (2022) The Effect of Technology-Assisted and Unassisted Problem-Based Learning on the Mathematical Higher Order Thinking Skills: Meta-Analysis Study.

Until now, there have been many literature studies on problem-based learning (PBL) on students' mathematical abilities. However, previous studies have not examined the effect of using technology in implementing PBL that focuses on higher order mathematical thinking skills (HOTS). This study aims to summarize, estimate, and evaluate the effect of the application of technology-assisted and non-technology-assisted PBL learning models on students' higher-order mathematical thinking skills, including critical, creative, problem solving, and mathematical reasoning skills in terms of the characteristics of the study year, education level, sample size, student demographics, and HOTS indicators. The meta-analysis technique was used to analyze data from 133 primary studies that met the inclusion criteria with the help of the Comprehensive Meta-Analysis Version 3.0 application. The research findings state that the overall effect of PBL implementation has a positive effect on students' mathematical HOTS and its effectiveness is better than conventional learning, with an effect size of 0.905 which is classified as high effect category. In addition, there was no significant difference in mathematical HOTS between students who were given technology-assisted PBL and students who were given non-technology-assisted PBL. The characteristics of the study sample size and student demographics are factors that cause the heterogeneity of students' mathematical HOTS. In contrast, the heterogeneity of the students' mathematical HOTS effect size was not influenced by the characteristics of the indicators of higher order mathematical thinking skills, years of study, and education levels. Thus, these findings recommend that mathematics teachers and lecturers choose to apply PBL as one of the best solutions to increase HOTS in mathematics learning, and it is necessary to consider the location where students study and should apply PBL in classes with a student capacity of no more than 30 participants.

Keywords: Mathematical Higher Order Thinking Skills, Problem-Based Learning, Technology, Meta-analysis.

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