

**EFEKTIVITAS *FLIPPING STEM CLASSROOM* TERHADAP
PENINGKATAN KETERAMPILAN BERPIKIR KRITIS DAN PROFIL
PERSEPSI KEMAMPUAN KOMUNIKASI SISWA PADA
PEMBELAJARAN GELOMBANG BUNYI**

TESIS

diajukan untuk memenuhi sebagian dari syarat untuk memperoleh gelar Magister
Pendidikan Fisika Program Studi Pendidikan Fisika



oleh
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ABSTRAK

Penelitian ini bertujuan untuk mengetahui keefektifan *flipping STEM classroom* dalam meningkatkan keterampilan berpikir kritis (KBK) dan profil persepsi kemampuan komunikasi siswa. *Flipping STEM classroom* merupakan kombinasi *flipped classroom* dan pendekatan STEM yang difokuskan untuk melatih KBK dan komunikasi pada materi gelombang bunyi. Sebagai pembandingnya, pembelajaran *flipped scientific classroom* diterapkan pada kelas lainnya pada materi gelombang bunyi. Metode yang digunakan adalah *mixed methods*, dengan desain *embedded experimental model*. Data peningkatan KBK didapat melalui hasil pretest dan posttest menggunakan instrument berbentuk soal uraian. Sedangkan data profil persepsi siswa terhadap kemampuan komunikasi didapat melalui pembagian angket di akhir pembelajaran. Peningkatan KBK dianalisis menggunakan uji *normalized gain* (n-gain), dan efektivitas pembelajaran dianalisis menggunakan uji hipotesis menggunakan Uji-t (*independent sample t test*), dan perhitungan *effect size* menggunakan formulasi *cohen's d*, sedangkan profil persepsi kemampuan komunikasi siswa dianalisis secara deskriptif. Hasil penelitian menunjukkan peningkatan KBK pada pembelajaran *flipping STEM classroom* berada pada level “tinggi” sedangkan pada pembelajaran *flipped scientific classroom* berada pada level “sedang”. Selain itu didapati bahwa pembelajaran *flipping STEM classroom* lebih efektif untuk meningkatkan KBK siswa dibandingkan pembelajaran *flipped scientific classroom*. Selain itu, profil persepsi kemampuan komunikasi lisan siswa berada pada level “baik sekali” dan profil persepsi kemampuan komunikasi tulisan siswa berada pada level “baik”.

Kata Kunci: *Flipped Scientific Classroom*; Pendekatan STEM; *Flipping STEM Classroom*; Keterampilan Berpikir Kritis; Kemampuan Komunikasi, persepsi Siswa

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EFFECTIVENESS OF FLIPPING STEM CLASSROOM ON IMPROVING CRITICAL THINKING AND PERCEPTION PROFILE OF STUDENTS' COMMUNICATION ABILITY IN SOUND WAVE LEARNING

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ABSTRACT

This study aims to determine the effectiveness of flipping STEM classrooms in improving critical thinking skills (CT) and the perception profile of students' communication skills. Flipping STEM classroom is a combination of flipped classroom and STEM approach focused on CT training and communication on sound wave material. As a comparison, flipped scientific classroom learning is applied to other classes on sound wave material. The method used is mixed methods, with an embedded experimental model design. Data on the increase in CT were obtained through the results of the pretest and posttest using an instrument in the form of a description question. While the profile data of students' perceptions of communication skills was obtained through the distribution of questionnaires at the end of the lesson. The increase in CT was analyzed using the normalized gain (n-gain) test, and learning effectiveness was analyzed using a hypothesis test using the t-test (independent sample t test), and the effect size calculation used the Cohen's d formulation, while the profile of students' communication skills perceptions was analyzed descriptively. The results showed that the increase in CT in the flipping STEM classroom learning was at a "high" level while in the flipped scientific classroom learning it was at a "medium" level. In addition, it was found that flipping STEM classroom learning was more effective for improving students' CT compared to flipped scientific classroom learning. In addition, the profile of perceptions of students' oral communication skills is at the level of "very good" and the profile of perceptions of students' written communication skills is at the level of "good".

Keywords: Flipped Scientific Classroom; STEM Approach; Flipping STEM Classroom; Critical Thinking; Communication Skills, students' apperception.

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