

## ABSTRAK

Cahyaning, Arum. 2019. *Pengembangan Buku Siswa Pendekatan Science, Technology, Engineering, and Mathematics terhadap Kemampuan Pemecahan Siswa Masalah Materi Persamaan dan Pertidaksamaan Nilai Mutlak Linear Satu Variabel Kelas X*. SKRIPSI. Program Studi S1 Pendidikan Matematika. Universitas Muhammadiyah Semarang. Pembimbing: I. Dwi Sulistyaningsih, S.Si.,M.Pd, II. Venissa Dian M, S.Pd., M.Pd

Pembelajaran merupakan suatu proses yang diselenggarakan oleh guru untuk membelajarkan siswa dalam belajar untuk memperoleh dan memproses ilmu pengetahuan, keterampilan serta. Salah satu komponen pembelajaran adalah media belajar yang terdiri dari bahan ajar. Berdasarkan hasil observasi langsung di kelas X MIPA 5 bahan ajar yang digunakan guru dalam mengajar tidak variatif karena siswa hanya terbatas menggunakan LKS saja, dan belum ada buku siswa yang digunakan, hanya buku guru yang digunakan hanya untuk bahan referensi ketika guru membutuhkan beberapa soal tambahan. Padahal kenyataannya kemampuan pemecahan masalah siswa rendah, hal itu dibuktikan dengan observasi di SMA N 15 siswa kelas X MIPA 5 dari 36 siswa didapat hasil belajar nilai ulangan siswa materi konsep nilai mutlak tahun sebelumnya dengan Kriteria Ketuntasan Minimum (KKM) sebesar 76 menunjukkan 11% siswa yang memperoleh nilai tuntas. Akibat kemampuan pemecahan masalah siswa rendah, motivasi dan keterampilan proses siswa dalam belajar juga rendah. Tujuan penelitian yaitu mengembangkan buku siswa pendekatan STEM terhadap kemampuan pemecahan masalah siswa materi persamaan dan pertidaksamaan nilai mutlak linear satu variabel kelas X yang valid dan efektif. Upaya untuk memecahkan masalah tersebut yaitu pengembangan buku siswa pendekatan *Science, Technology, Engineering, and Mathematics* (STEM). Metode penelitian pengembangan buku siswa pendekatan STEM menggunakan model pengembangan modifikasi Thiagarajan 4D (3D) yang terdiri dari tiga tahap analisis yaitu *Define* (pendefinisian), *Design* (perancangan), dan *Develop* (pengembangan). Teknik pengambilan data penelitian dengan tes kemampuan pemecahan masalah, angket motivasi, lembar observasi keterampilan proses, dan lembar penilaian buku siswa. Subjek penelitian yaitu siswa kelas X MIPA SMA N 15 Semarang. Hasil penelitian didapatkan Buku Siswa mendapatkan skor rata-rata dengan persentase 93,07 %, sehingga dapat disimpulkan bahwa Buku Siswa valid dan layak digunakan. Penerapan Buku Siswa dengan pendekatan STEM efektif hal itu dapat dibuktikan dengan kemampuan pemecahan masalah siswa sudah mencapai ketuntasan individu dan klasikal. Rata-rata kemampuan pemecahan masalah siswa yang menerapkan Buku Siswa mencapai KKM yaitu 76,97. Persentase ketuntasan sudah melebihi 80% yaitu 86,11 % atau 31 dari 36 siswa, ada pengaruh keterampilan proses dan motivasi terhadap kemampuan pemecahan masalah dalam penerapan Buku Siswa sebesar 98,7 %, dan terdapat perbedaan rata-rata kemampuan pemecahan masalah, pada kelas eksperimen rata-rata kemampuan pemecahan masalah sebesar 76,9664 dan pada kelas kontrol rata-rata kemampuan pemecahan masalah sebesar 38,2814. Saran dari penelitian ini adalah guru-guru dapat menggunakan Buku Siswa untuk mengajari materi persamaan dan pertidaksamaan nilai mutlak linear satu variabel, Buku Siswa yang dihasilkan masih perlu diujicobakan di sekolah-sekolah lain agar diperoleh hasil dan Buku Siswa yang berkualitas, dan guru-guru dapat menggunakan Buku Siswa untuk pembelajaran materi lain sebagai variasi dalam pembelajaran.

Kata Kunci: Buku Siswa, STEM, Kemampuan Pemecahan Masalah.

### ABSTRACT

Cahyaning, Arum. 2019. Development of Student's Book Approach to Science, Technology, Engineering, and Mathematics on Students' Problem Solving Capabilities on Material Problems of Equality and Inequality Absolute Linear Values of One Class X Variable. SKRIPSI. S1 Material Study Program in Education. Muhammadiyah University of Semarang. Supervisor: I. Dwi Sulistyarningsih, S.Sc., M.Pd, II. Venissa Dian M, S.Pd., M.Pd

Learning is a process organized by the teacher to learn students in learning to acquire and process knowledge, skills and. One component of learning is learning media which consists of teaching materials. Based on direct observations in class X MIPA 5 teaching materials used by teachers in teaching are not varied because students are only limited to using worksheets, and no student books have been used, only teacher books are used only for reference material when the teacher needs some additional questions. When in fact the problem solving ability of students is low, this is evidenced by observations in SMA N 15 grade 10 students of Mathematics and Natural Sciences 5 out of 36 students obtained the results of students' learning scores the concept of the absolute value of the previous year with a Minimum Completion Criteria (KKM) of 76 showing 11% of students that gets a complete score. Due to the low problem solving ability of students, students' motivation and process skills in learning are also low. The aim of the research is to develop a student book STEM approach to the problem solving ability of students of material equations and the inequality of the absolute value of a linear class X variable that is valid and effective. Efforts to solve these problems are the development of student books approach to Science, Technology, Engineering, and Mathematics (STEM). The research method of developing STEM approach students' books uses the Thiagarajan 4D (3D) modification development model which consists of three stages of analysis namely Define, Design, and Develop. Research data collection techniques with problem solving ability tests, motivation questionnaires, process skills observation sheets, and student book assessment sheets. The research subjects were students of class X MIPA SMA N 15 Semarang. The results of the study showed that the Student Book received an average score of 93.07%, so it can be concluded that the Student Book is valid and suitable for use. The application of Student Books with an effective STEM approach can be proven by students' problem solving abilities that have reached individual and classical completeness. The average problem solving ability of students who apply the Student Book reaches KKM which is 76.97. The percentage of completeness has exceeded 80% namely 86.11% or 31 of 36 students, there is the influence of process skills and motivation on problem solving abilities in the application of Student Books by 98.7%, and there are differences in the average ability of problem solving, in the experimental class the average problem solving ability was 76.9664 and in the control class the average problem solving ability was 38.2814. The suggestion from this research is that teachers can use Student Books to teach the material of equality and inequality of the absolute value of a linear variable, the resulting Student Book still needs to be tested in other schools in order to obtain results and quality Student Books, and teachers can use Student Books for learning other material as variations in learning.

Keywords: Student Book, STEM, Problem Solving Ability.