

PAPER CIRCUIT PROJECT-BASED STEAM LEARNING TO ENHANCE STUDENT UNDERSTANDING AND CREATIVITY

RESEARCH PAPER

Submitted as Requirement to Obtain Degree of Sarjana Pendidikan in
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**INTERNATIONAL PROGRAM ON SCIENCE EDUCATION
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Sebuah skripsi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar
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DECLARATION

I declare that the research entitled "**Paper Circuit Project-based STEAM Learning to Enhance Student Understanding and Creativity**" has been composed personally by myself, except where otherwise stated by reference or acknowledgement. I do not plagiarize in any way that is not appropriate with applicable regulation. For the declaration, I am ready to accept the risk or sanction if there is copyright infringement found.

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ABSTRACT

Students believed physics is one of the most difficult sciences in education and their interest in learning physics was lacking. Therefore, this study aims to enhance students' understanding and creativity in the STEAM learning system in electricity topic by creating a project (Paper Circuit) using the students' creativity at the junior high school level. Quantitative research with a pre-experimental design used as method for this study. The population is 8th grade and 9th grade (50 students adapted to the curriculum used in the school) in one of Junior Secondary School that is located in Bandung and Cimahi, Indonesia. The data is obtained through results from the pretest-posttest results standing from average of pre-test score was 57.04 and the post-test score was 76.64. The nonparametric test was tested using the Willcoxon test, for measuring student understanding. The results from e Willcoxon is .000 which the results show sig. <0.05, which means there is a significant difference pre-test and post-test. Students' creativity is obtained from Creativity Product Analysis Matrix (CPAM) and the result for project 1 as 73.71% which is categorized enough and project 2 as 83.13% which is categorized as good. Based on the result, Paper Circuit STEAM project-based learning can enhance student understanding and creativity STEAM project-based learning can be used as alternative teaching strategies in Junior Secondary School.

Keywords: Electricity, STEAM Project Based Learning, Students' Creativity, Students' Understanding.

PEMBELAJARAN STEAM BERBASIS PROYEK SIRKUIT KERTAS UNTUK MENINGKATKAN PEMAHAMAN DAN KREATIVITAS SISWA

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ABSTRAK

Siswa percaya fisika adalah salah satu ilmu yang paling sulit dalam pendidikan dan minat mereka untuk belajar fisika kurang. Oleh karena itu, penelitian ini bertujuan untuk meningkatkan pemahaman dan kreativitas siswa dalam sistem pembelajaran STEAM pada materi kelistrikan dengan membuat proyek (sirkuit kertas) menggunakan kreativitas siswa di tingkat SMP. Penelitian kuantitatif dengan desain pre-experimental digunakan sebagai metode penelitian ini. Populasinya adalah kelas 8 dan 9 (50 siswa disesuaikan dengan kurikulum yang digunakan di sekolah) di salah satu SMP yang terletak di Bandung dan Cimahi, Indonesia. Data diperoleh melalui hasil pretest-posttest terdiri dari rata-rata skor pre-test adalah 57,04 dan skor post-test adalah 76,64. Uji nonparametrik diuji dengan menggunakan uji Willcoxon, untuk mengukur pemahaman siswa. Hasil dari Willcoxon adalah .000 yang hasilnya menunjukkan $\text{sig.} < 0,05$ yang berarti terdapat perbedaan yang signifikan antara pretest dan posttest. Kreativitas siswa diperoleh dari Creativity Product Analysis Matrix (CPAM) dan hasil proyek 1 sebesar 73,71% dikategorikan cukup dan proyek 2 sebesar 83,13% dikategorikan baik. Berdasarkan hasil tersebut, pembelajaran berbasis proyek kertas sirkuit dengan pembelajaran STEAM dapat meningkatkan pemahaman dan kreativitas siswa. Pembelajaran berbasis proyek STEAM dapat digunakan juga sebagai strategi pengajaran alternatif di SMP.

Kata kunci: Listrik, Pembelajaran Berbasis Proyek STEAM, Kreativitas Siswa, Pemahaman Siswa,

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PREFACE

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This research paper becomes the final requirement to obtain degree as a Sarjana Pendidikan in the International Program on Science Education major at Universitas Pendidikan Indonesia. The author released this book still has deficiencies and still needs to be improved. Therefore, the author expects to get input on suggestion to improve the quality of this research book in the future. The writer hopes that this book can be useful for readers or people who need references, information, or knowledge from this book about science education.

Bandung, August 2023

Author

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