

ABSTRAK

PENGEMBANGAN BAHAN AJAR STEAM BERBASIS PjBL PADA MATERI KLASIFIKASI TUMBUHAN KELAS VII SMP/MTs (Yani Astuti, 2025)

Pembelajaran abad 21 diharapkan menumbuhkan keterampilan menghadapi era revolusi industri 4.0. Kenyataannya peserta didik masih pasif dan kurang antusias mengikuti pembelajaran, kurang terasahnya penggunaan teknologi, kurang pemahaman materi, serta penggunaan bahan ajar STEAM berbasis PjBL belum pernah digunakan. Penelitian pengembangan ini bertujuan untuk mengetahui prosedur pengembangan, kevalidan, kepraktisan dan keefektifan bahan ajar STEAM berbasis PjBL pada materi klasifikasi tumbuhan. Penelitian ini menggunakan desain model pengembangan 4D (*Define, Design, Develop, Disseminate*). Teknik pengumpulan data menggunakan angket dan tes. Analisis data terdiri dari data kualitatif dan kuantitatif. Hasil penelitian pada tahap *define* dilakukan analisis awal-akhir, analisis karakteristik peserta didik, analisis konsep, analisis tugas, dan analisis tujuan pembelajaran. Tahap *design* dilakukan perancangan produk beserta instrumen penelitian. Tahap *develop* dilakukan validasi produk, uji coba satu-satu dan uji coba kelompok kecil untuk menguji praktikalitas produk. Tahap *disseminate* dilakukan uji coba lapangan untuk menguji efektivitas penggunaan produk, pengemasan produk dalam bentuk cetak, dan penyebaran pada beberapa madrasah di Tasikmalaya. Validasi bahan ajar oleh ahli materi diperoleh persentase 90,75% dan ahli media 90, 40% keduanya dinyatakan sangat valid, hasil respon peserta didik pada ujicoba satu-satu diperoleh persentase 92,08% dalam kategori sangat praktis, pada ujicoba kelompok kecil diperoleh persentase 92,22% dalam kategori sangat praktis. Hasil analisis *pretest-posttest* pemahaman materi peserta didik dengan uji *N-Gain* diperoleh skor 0,74 dengan kategori tinggi. Hasil analisis *Effect Size* diperoleh nilai 4,06 dengan kategori *Strong Effect*. Dapat disimpulkan bahan ajar STEAM berbasis PjBL dapat menjadi salah satu media pembelajaran yang dapat meningkatkan hasil belajar peserta didik dalam pembelajaran IPA, khususnya materi klasifikasi tumbuhan.

Kata Kunci: bahan ajar, STEAM, PjBL, hasil belajar

ABSTRACT

DEVELOPMENT OF STEAM TEACHING MATERIALS BASED ON PjBL ON PLANT CLASSIFICATIONS MATERIAL FOR CLASS VII SMP/MTs (Yani Astuti, 2025)

21st century learning is expected to foster skills to face the era of the industrial revolution 4.0. In reality, students are still passive and less enthusiastic about participating in learning, the use of technology is not honed, the understanding of the material is lacking, and the use of PjBL-based STEAM teaching materials has never been used. This development research aims to determine the development procedure, validity, practicality and effectiveness of PjBL-based STEAM teaching materials on plant classification material. This study uses a 4D development model design (Define, Design, Develop, Disseminate). Data collection techniques use questionnaires and tests. Data analysis consists of qualitative and quantitative data. The results of the study at the define stage were carried out initial-final analysis, analysis of student characteristics, concept analysis, task analysis, and analysis of learning objectives. The design stage was carried out product design along with research instruments. The develop stage was carried out product validation, one-on-one trials and small group trials to test the practicality of the product. The disseminate stage was carried out field trials to test the effectiveness of product use, product packaging in printed form, and dissemination to several madrasahs in Tasikmalaya. Validation of teaching materials by material experts obtained a percentage of 90.75% and media experts 90, 40% both were declared very valid, the results of student responses in one-on-one trials obtained a percentage of 92.08% in the very practical category, in small group trials obtained a percentage of 92.22% in the very practical category. The results of the pretest-posttest analysis of students' understanding of the material with the N-Gain test obtained a score of 0.74 with a high category. The results of the Effect Size analysis obtained a value of 4.06 with a Strong Effect category. It can be concluded that PjBL-based STEAM teaching materials can be one of the learning media that can improve student learning outcomes in science learning, especially plant classification material.

Keywords: teaching materials, STEAM, PjBL, learning outcomes