

ABSTRAK

Desi Sity Rahmah : Desain Pembelajaran Berbasis Proyek *Microgreens* Terintegrasi E-STREAM (*Environmental, Science, Technology, Religion, Engineering, Arts, Mathematics*) untuk Meningkatkan Literasi Sains dan Kreativitas Siswa

Rendahnya literasi sains siswa menjadi tantangan dalam pembelajaran biologi di sekolah. Pembelajaran yang bersifat teoritis, minim praktik, dan tidak mengaitkan kehidupan nyata menyebabkan siswa kesulitan memahami konsep ilmiah secara utuh. Penelitian ini bertujuan mengembangkan pembelajaran berbasis proyek *microgreens* terintegrasi E-STREAM dalam meningkatkan literasi sains dan kreativitas siswa. Literasi sains yang dikembangkan mencakup enam kompetensi, yaitu: menjelaskan fenomena ilmiah; merancang, mengevaluasi, dan menginterpretasikan penyelidikan ilmiah; menggunakan informasi ilmiah dalam pengambilan keputusan; memahami dampak interaksi manusia dengan sistem Bumi; bertindak sistematis untuk keberlanjutan; dan menghargai perspektif dalam menyikapi krisis sosio-ekologis. Sedangkan kreativitas siswa diukur melalui tiga dimensi yaitu novelty, resolution, dan elaboration. Metode penelitian menggunakan R&D model 3D (*Define, Design, Develop*). Hasil validasi perangkat menunjukkan kategori sangat valid (Aiken's $V > 0,95$) dan keterlaksanaan pembelajaran 93,3%. N-Gain literasi sains tertinggi pada kelas eksperimen sebesar 0,74 pada kompetensi keempat dan terendah 0,60 pada kompetensi kedua. Rata-rata level kreativitas siswa pada kelas eksperimen sebesar 83% (*expressing*). Refleksi siswa menunjukkan capaian *fact* 87%, *feeling* 91%, *finding* 95%, dan *future* 99% (kategori sangat baik). Melalui pendekatan ini, siswa mampu memahami konsep ilmiah secara kontekstual, mengembangkan keterampilan berpikir ilmiah dan lintas disiplin, serta menunjukkan sikap religi dan peduli lingkungan, sejalan dengan pembentukan profil pelajar abad 21.

Kata Kunci: E-STREAM, kreativitas, literasi sains, *microgreens*, PjBL.

ABTRACT

Desi Sity Rahmah : *Microgreens Project-Based Learning Integrated With E-STREAM (Environmental, Science, Technology, Religion, Engineering, Arts, Mathematics) To Improve Students' Science Literacy And Creativity*

Low scientific literacy among students remains a persistent challenge in biology education. Theoretical instruction with limited practical experience and lack of real-life context often hinders students from grasping scientific concepts comprehensively. This study aimed to develop and assess the effectiveness of project-based learning using microgreens integrated with the E-STREAM (Environmental, Science, Technology, Religion, Engineering, Arts, Mathematics) approach in enhancing students' scientific literacy and creativity. Scientific literacy was measured through six core competencies: explaining scientific phenomena; designing, evaluating, and interpreting scientific investigations; using scientific information in decision-making; understanding human interactions with Earth systems; taking systematic action for sustainability; and valuing diverse perspectives on socio-ecological issues. Creativity was assessed through three dimensions: novelty, resolution, and elaboration. The study employed a 3D R&D model (Define, Design, Develop). Learning tools were validated as highly effective (Aiken's $V > 0.95$), and implementation reached 93.3%. The highest scientific literacy N-Gain was 0.74 and the lowest 0.60. The average creativity score was 83% (expressing category). Student reflections showed strong engagement across all 4F aspects: fact (87%), feeling (91%), finding (95%), and future (99%). This approach fostered contextual scientific understanding, interdisciplinary thinking, religious awareness, and environmental concern aligning with the goals of 21st-century learner development.

Keywords: E-STREAM, , science literacy, creativity, student reflection. PjBL.