

ABSTRAK

Nikmatul Maghfiroh. 2025. Pengaruh Media Pembelajaran Berbasis *Virtual Laboratorium* Pada Materi Jaringan Tumbuhan Terhadap Hasil Belajar Siswa Kelas XI MA. Skripsi. Program Studi Pendidikan Biologi. Fakultas Keguruan dan Ilmu Pendidikan. Universitas PGRI Madiun. Pembimbing: Joko Widiyanto, S.Pd., dan Drs. R. Bakti Kiswardianta, M.Pd.

Pembelajaran jaringan tumbuhan seringkali sulit dipahami karena sifatnya yang abstrak dan membutuhkan pengamatan mikroskopik. Di MA Al Mujaddadiyah Madiun, keterbatasan laboratorium menjadi kendala dalam pelaksanaan praktikum. Penelitian ini dilakukan di MA Al Mujaddadiyah pada bulan April 2025 hingga bulan Juni 2025. Penelitian ini bertujuan mengukur pengaruh media pembelajaran berbasis *virtual laboratorium* terhadap hasil belajar siswa. Metode yang digunakan adalah kuantitatif eksperimen dengan subjek sebanyak 27 siswa kelas XI. Data diperoleh melalui angket siswa, validasi ahli media, dan uji hipotesis. Hasil angket siswa menunjukkan bahwa 81% siswa menilai media sangat efektif, 15% efektif, dan sisanya 4% cukup efektif. Validasi ahli media menunjukkan kelayakan sebesar 81,6% dengan skor tinggi pada semua indikator. Uji Independent Sample t-test menghasilkan signifikansi $(0,028) < (0,05)$, menunjukkan adanya pengaruh signifikan penggunaan virtual laboratorium terhadap hasil belajar siswa.

Kata Kunci: Virtual Laboratorium, Jaringan Tumbuhan, Media Pembelajaran, Hasil Belajar

ABSTRACT

Nikmatul Maghfiroh. 2025. The Effect of Virtual Laboratory-Based Learning Media on Plant Tissue Material on Student Learning Outcomes. Thesis. Biology Education Study Program. Faculty of Teacher Training and Education. Universitas PGRI Madiun. Supervisors: Joko Widiyanto, S.Pd., and Drs. R. Bekti Kiswardianta, M.Pd.

Learning about plant tissue is often difficult to understand due to its abstract nature and the need for microscopic observation. At MA Al Mujaddadiyyah Madiun, limited laboratory space hinders practical work. This research was conducted at MA Al Mujaddadiyyah from April 2025 to June 2025. The aim of this study was to measure the effect of virtual laboratory-based learning media on student learning outcomes. The method used was a quantitative experiment with 27 eleventh-grade students as subjects. Data were obtained through student questionnaires, media expert validation, and hypothesis testing. The results of the student questionnaire showed that 81% of students considered the media very effective, 15% as effective, and the remaining 4% as quite effective. Media expert validation showed a feasibility rate of 81.6%, with high scores on all indicators. The Independent Sample t-test yielded a significance value of $(0.028) < (0.05)$, indicating a significant effect of the use of virtual laboratories on student learning outcomes.

Keywords: Virtual Laboratory, Plant Tissue, Learning Media, Learning Outcomes